FOUNDED IN 1856

RAILWAY AGE

JUNE 5, 1948

McCARTNEY LIBRARY
GENEVA COLLEGE

AC&Y ASWX AA AT&SF ACL B&O B-WC B&LE BSCO
B&M C&I CN CP CNJ CRP CV C&EI C&NW CSTPM&O
CRR D&H DL&W DC DT&I DSO ERIE FRDX G&J GA GTW GN
IC ITC IGN INT KCS
L&N L&NE LV MEC
MV M&STL M-ILL MP
MON CON MRR NSCOB
NOT&M NRBX NYC NYNH&H NYO&W NS N&W
NP OSC ONT P&LE
P&S P&WV QL&P RDG
RSCX RS RICX STLB&M
STL&O'F SAL SOO S&I
T&P UCX USWD VMRYB VGN
WAB WRA W&LE
WM

DURING

1947

170,675,000

HOPPER CAR TONS!

were

PROTECTED FROM LOSS

in the hopper door area by

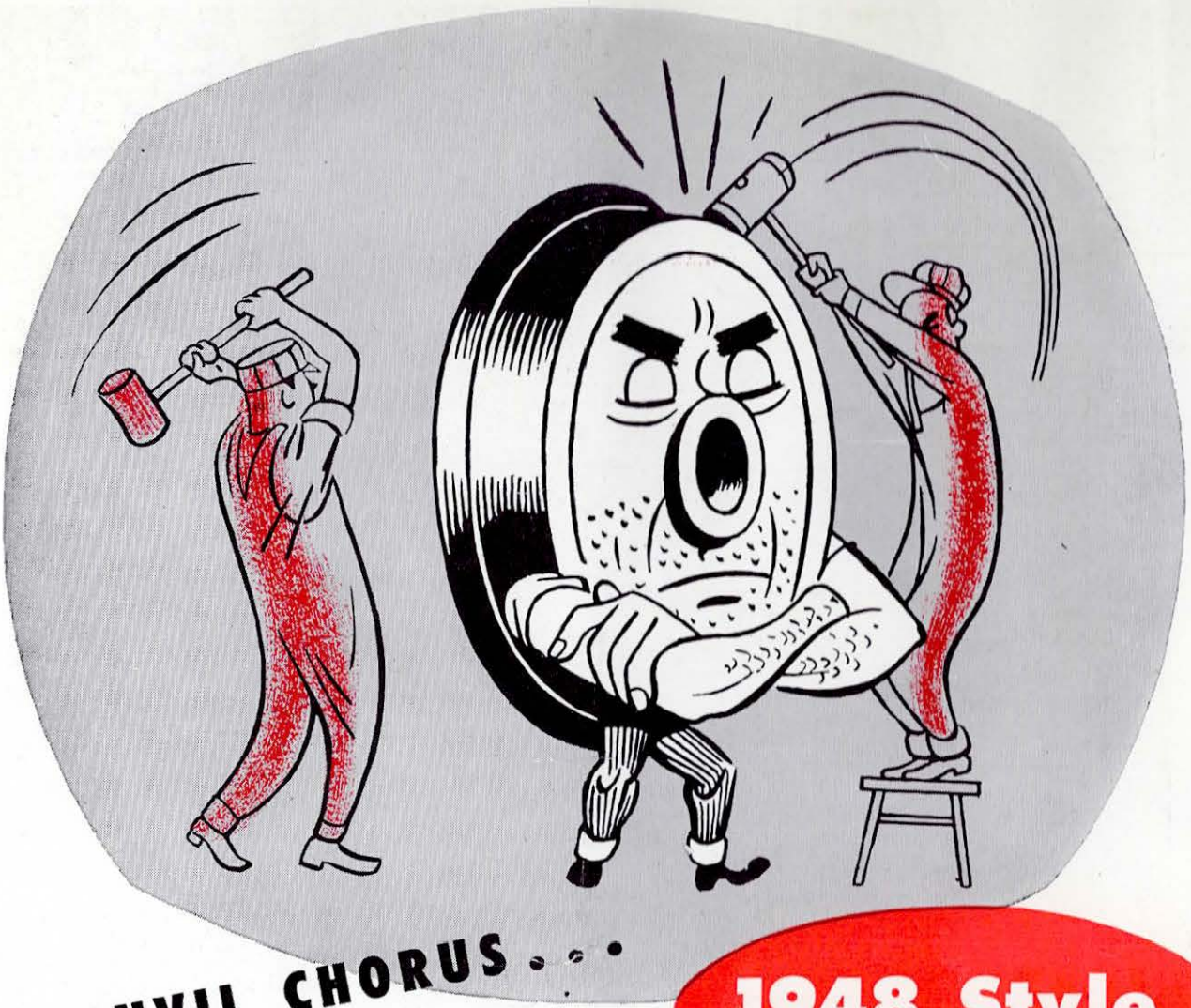
WINE

Cast Steel

HOPPER

FRAMES

THE WINE RAILWAY APPLIANCE COMPANY, TOLEDO 9, OHIO



ANVIL CHORUS . . .

1948 Style

Blows from a sledge hammer would seem gentle to the Tough Guy compared with the testing of a chilled car wheel in a new machine developed for the purpose by the AMCCW Research staff.

This is the machine built to test either flange or rim for resistance to impact blows. To supplement it in making possible a complete study of wheel tread strength, the Association makes good use of its hydraulic press for the measuring of static flange strength.

In addition to the technically-trained personnel which supervises such tests at research headquarters in Chicago, AMCCW members are served by a staff of resident inspectors, general inspectors and supervisors.

From the combined efforts of our entire force, spectacular advances in Chill control have resulted — and wheels with stronger rims and stronger flanges are available for present-day freight car service. It is difficult to believe the vast improvement of the chilled car wheel of today as compared with the wheel of yesterday.

AMCCW

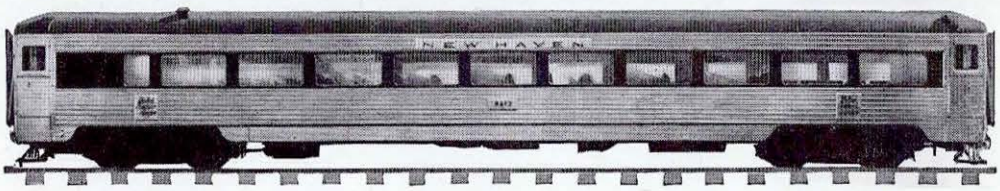
ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS

445 NORTH SACRAMENTO BOULEVARD, CHICAGO 12, ILL.

American Car & Foundry Co. • Canadian Car & Foundry Co. • Griffin Wheel Co.
Marshall Car & Foundry Co. • New York Car Wheel Co. • Pullman-Standard Car Mfg. Co.
Southern Wheel (American Brake Shoe Co.)

6405

Published weekly by Simmons-Boardman Publishing Corporation, Orange, Conn. Executive Offices, 30 Church Street, New York 7, N. Y. Entered as second class matter at Orange, Conn., under the act of March 3, 1879. Subscription price $6.00 for one year, U. S. and Canada. Single copies, 50 cents each. Vol. 124, No. 23.



Seen the New Haven's latest streamlined coaches?

They're beauties—sleek, graceful jobs with every flowing line designed for eye-appeal. Outside, the luster of fluted stainless steel blends pleasingly with a color band of hunter green. Trimness of line is further enhanced by windows of panoramic type, each being so placed that it provides unobstructed vision for four passengers.

Interiors, equally attractive, are equipped with every modern convenience and comfort, including revolving seats, conditioned air, diffused lighting, mechanically-chilled drinking water, and separate smoking compartment. Good news to riders: over 100 of these super-coaches are now in regular service.

A very heavy proportion of these cars are equipped with Bethlehem wrought-steel wheels and forged-steel axles. We're naturally happy to be so well represented, and we feel that these carefully-made products will more than justify their choice; will team up nicely with the other fine equipment of the coaches.

When planning new cars, let Bethlehem talk wheels and axles with you.

BETHLEHEM STEEL

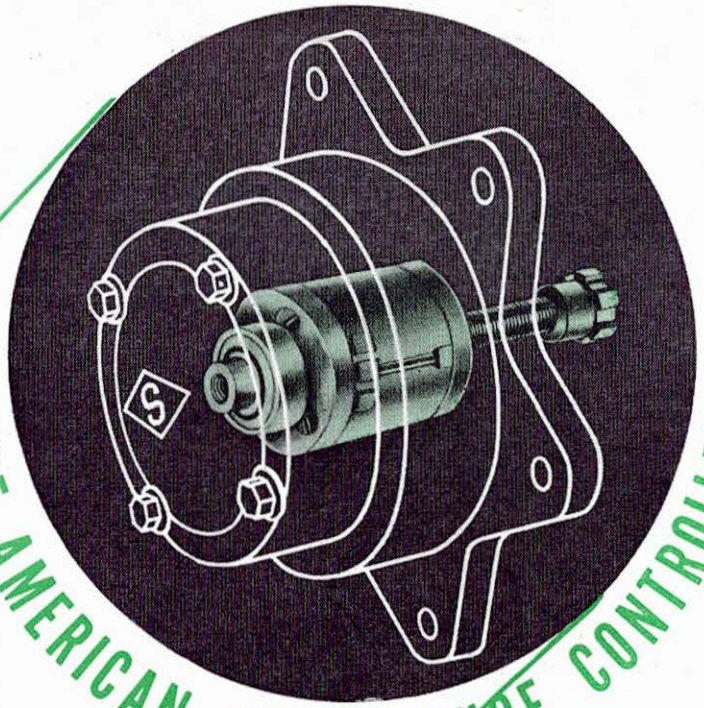
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM WROUGHT-STEEL WHEELS and FORGED-STEEL AXLES

"Brake Shoe research serves you today and anticipates tomorrow"

Wm. B. Given, Jr., President



THE AMERICAN BRAKE SHOE CONTROLLER

● A successful pitcher must have speed and control. The American Brake Shoe Controller has these necessary qualifications which make it the leader in its field.

That's why fleets of modern streamliners today are equipped with the American Brake Shoe Controller, the electrically-operated controller that automatically prevents slid flat car wheels. Heat, cold, vibration, shock do not affect its accurate and speedy operation. Its control commences the instant that slippage first occurs, restoring full brake the moment slippage is eliminated. American Brake Shoe Company, 230 Park Ave., New York 17, N. Y.

AMERICAN Brake Shoe COMPANY

BRAKE SHOE AND CASTINGS DIVISION

6546

HOOPERWOOD

REG. U.S. PAT. OFF.

FIRE CHIEF

WON'T BURN

Not even the flame from an oxyacetylen torch will ignite FIRE CHIEF Finished Canvas. But that's only part of the story. FIRE CHIEF Finish also resists water, wear, weather and mildew. It is permanent . . . and actually increases the life of canvas several times.

FIRE CHIEF Finish is available in any of three ways:

- *Specify* FIRE CHIEF Finished Hooperwood Duck, or . . .
- *Send* fabrics to our mills for FIRE CHIEF treatment, or . . .
- *Apply* FIRE CHIEF Compound to new or used untreated canvas.

For canvas products with a future—specify FIRE CHIEF. We invite your further inquiry.

A PRODUCT OF *Hooperwood Mills*

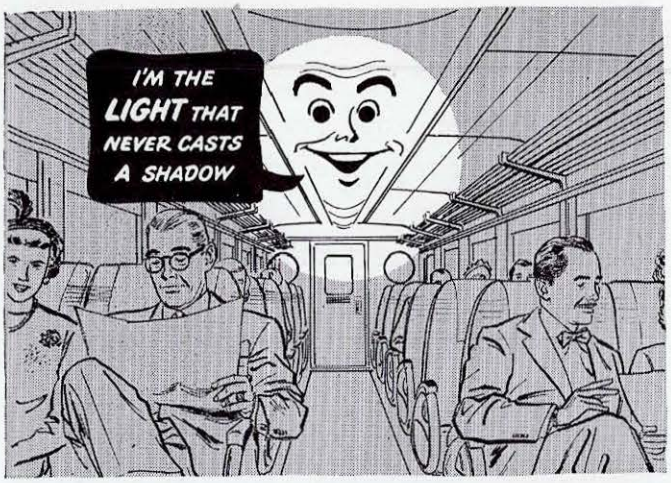
Manufactured under U. S. Patents No. 2,299,612, No. 2,044,176 and others.

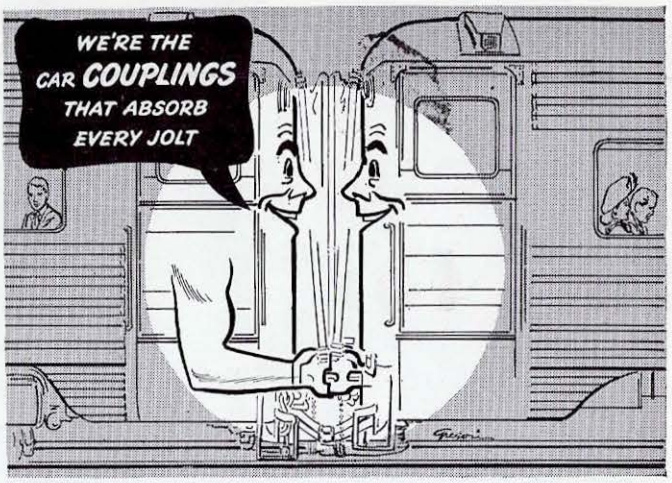
WM. E. HOOPER & SONS CO.

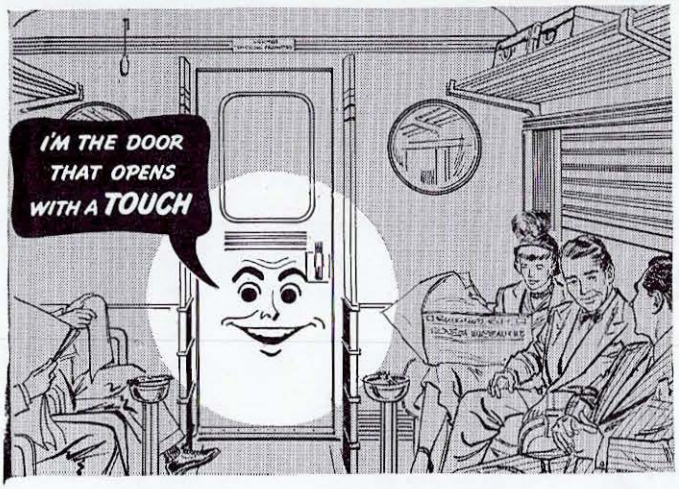
General Sales Offices:

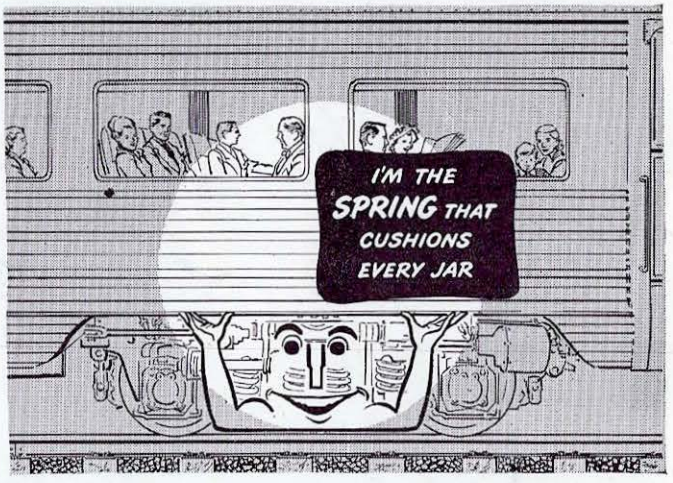
New York 320 Broadway — PHILADELPHIA Juniper & Cherry Sts. — Chicago 300 W. Adams St.

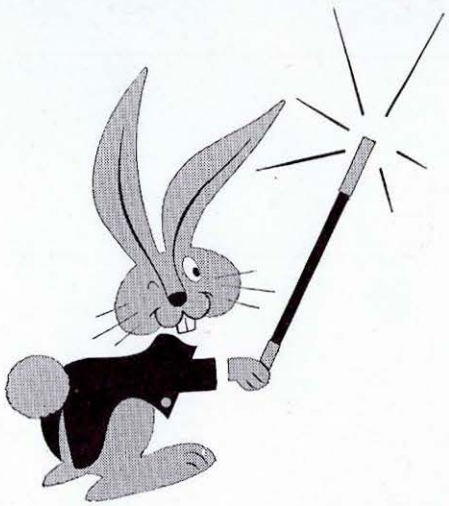
Hooperwood Mills: Woodberry, Baltimore, Md.











This is magic

Convenience and comfort are indeed words to conjure with on the New Haven's gleaming new stainless steel coaches. Important mechanical improvements make shake, sway and jolt disappear into thin air. Smart aluminum interiors, pleasantly air-conditioned, add delightful all-weather ease. New fluorescent lighting eliminates all shadow and glare. Pneumatic doors open automatically at a fingertip touch. Partitioned smoking lounges right in each coach offer a charmed setting for leisure enroute. And all these are but *typical* of the many outstanding innovations provided.

Marking an important milestone in railroad progress, 103 of these grand new coaches are already in service on New Haven trains. To the manufacturers and designers who created them they offer a noteworthy testimonial. To the passengers who will use them they give a new and thoroughly gratifying definition of travel by train.

When you've got to get there . . . take **The NEW HAVEN R.R.**

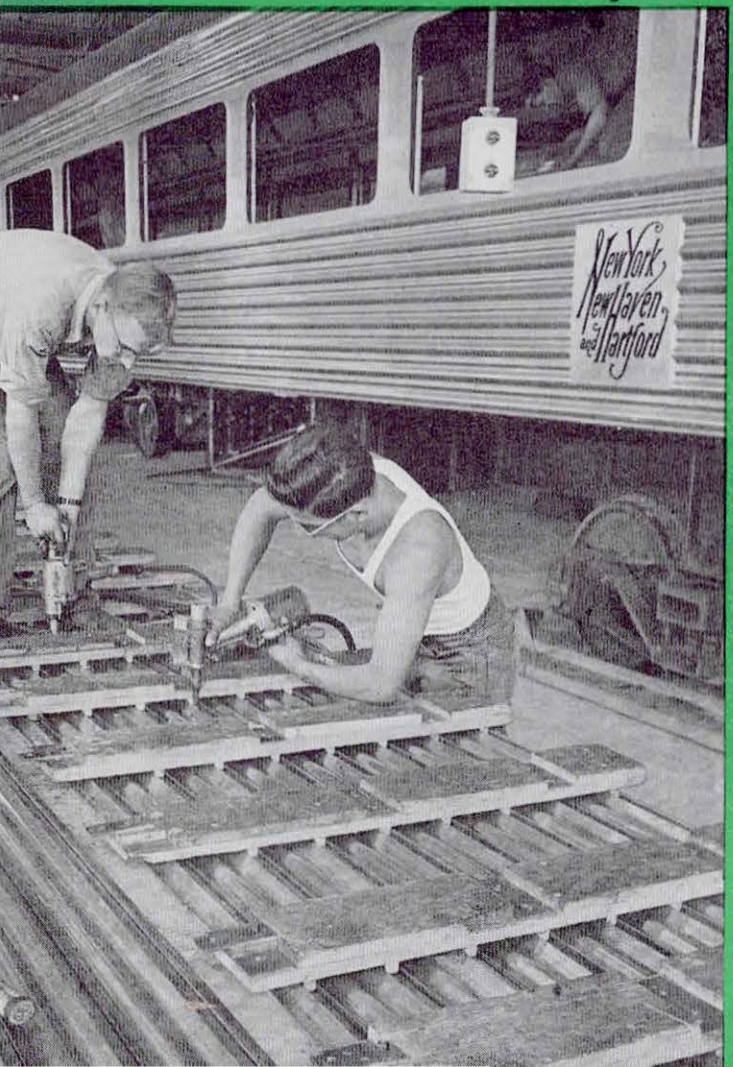
Key to New England

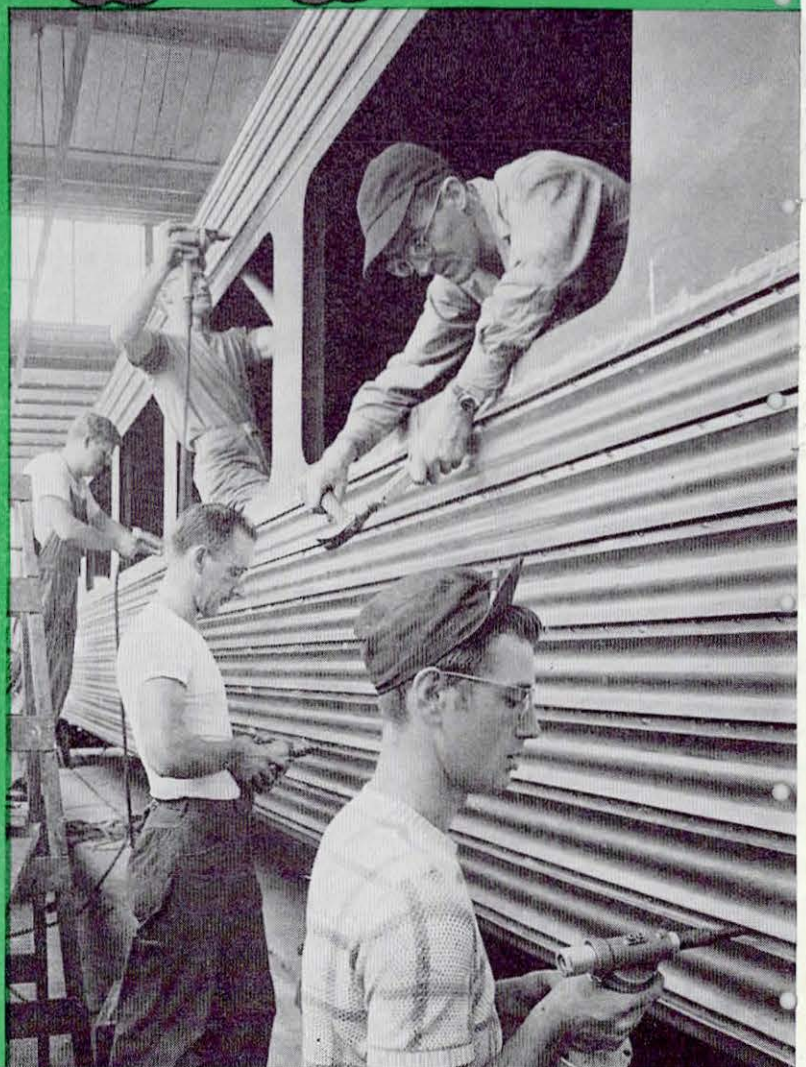
VISIT MAIN STREET, SOUTHERN NEW ENGLAND, New Haven's exciting exhibit in Grand Central Terminal, N. Y.

207 New Passenger Cars for The New York New Haven and Hartford

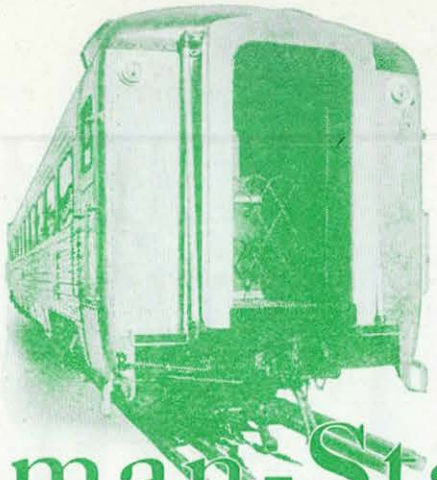
Coming up... in stainless steel and New Haven hunter green! A grand total of two hundred and seven grand cars, delivered or on order... with more than a hundred of them already gliding the rails in the New Haven's famous trains. That is Pullman-Standard's contribution to a great railroad's forward-looking modernization program.

The New Haven turned to Pullman-Standard for sleeping cars, coaches, dining and grill-service cars, and parlor and lounge cars of highest quality and most advanced design. Most of these are being produced at Pullman-Standard's strategically located Worcester plant.





FROM THE WORLD'S
LARGEST BUILDERS

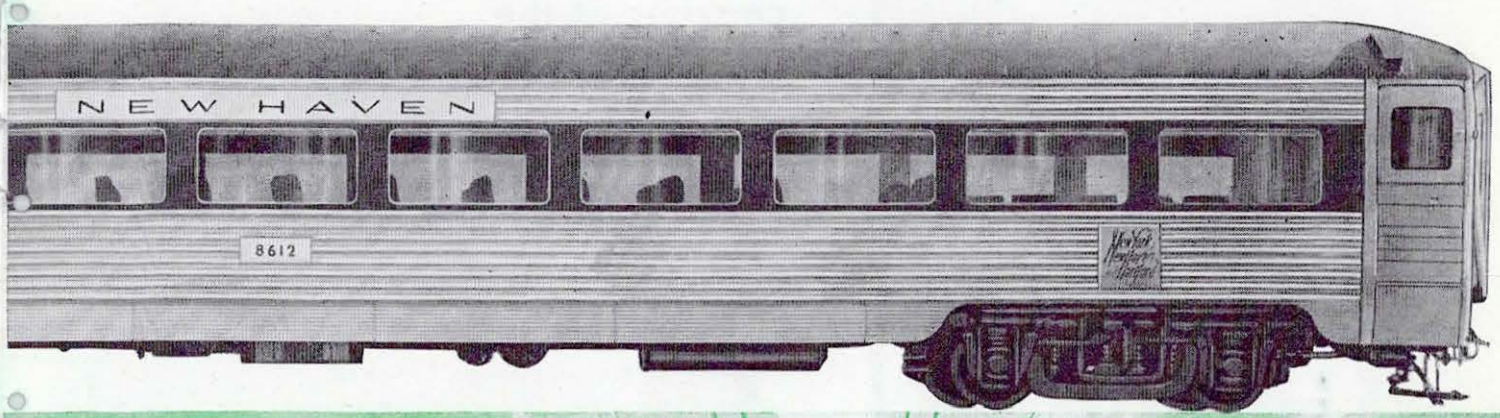


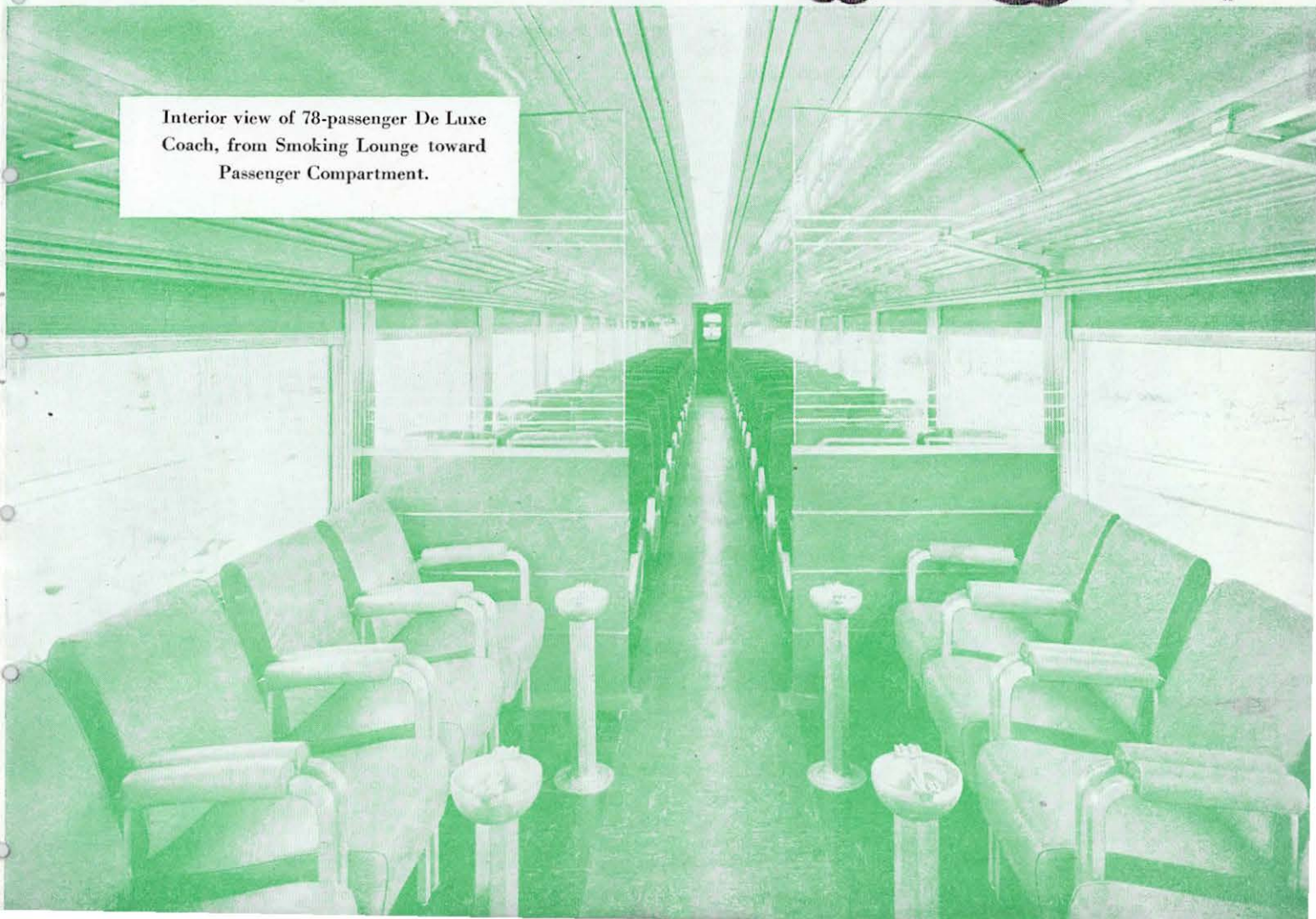
OF STREAMLINED
RAILROAD CARS

Pullman-Standard

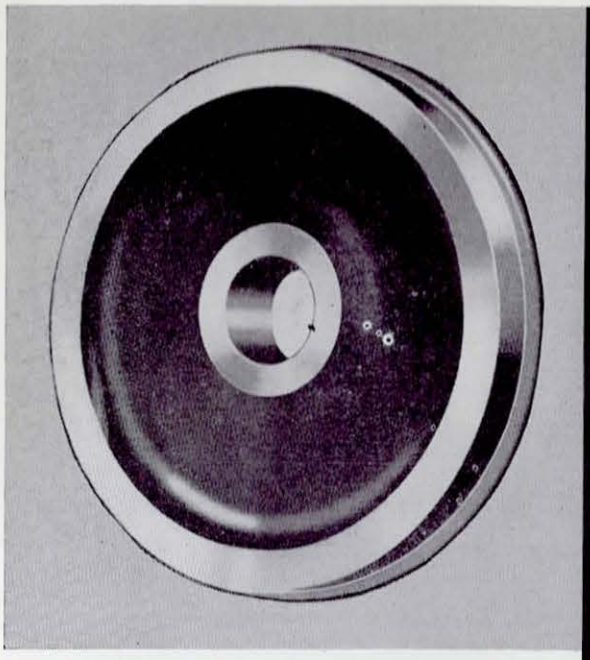
CAR MANUFACTURING COMPANY

CHICAGO • NEW YORK • CLEVELAND • WASHINGTON, D. C. • PITTSBURGH • BIRMINGHAM • WORCESTER, MASS.
SAN FRANCISCO Sales Representative: Mark Noble





Interior view of 78-passenger De Luxe Coach, from Smoking Lounge toward Passenger Compartment.



WHEELS by STANDARD STEEL

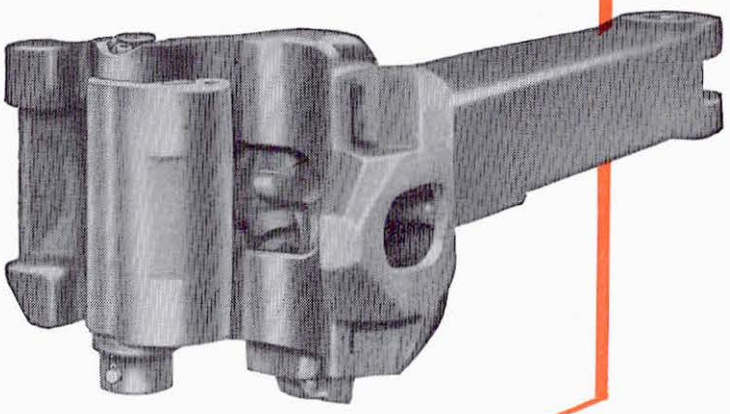
Serving on the new deluxe coaches of the NEW YORK, NEW HAVEN & HARTFORD RAILROAD

ROLLED WHEELS	STEEL CASTINGS
TIRES	FORGINGS
SPRINGS	CONNECTING RODS

Rim-treated wheels—A.A.R. Standard A-36 design, furnished to A.A.R. Specification M-107, Class BR. The Baldwin Locomotive Works, Standard Steel Works Division, Burnham, Pa., U.S.A. Offices: Birmingham, Boston, Chicago, Cleveland, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Washington.

BALDWIN

STANDARD STEEL WORKS DIVISION

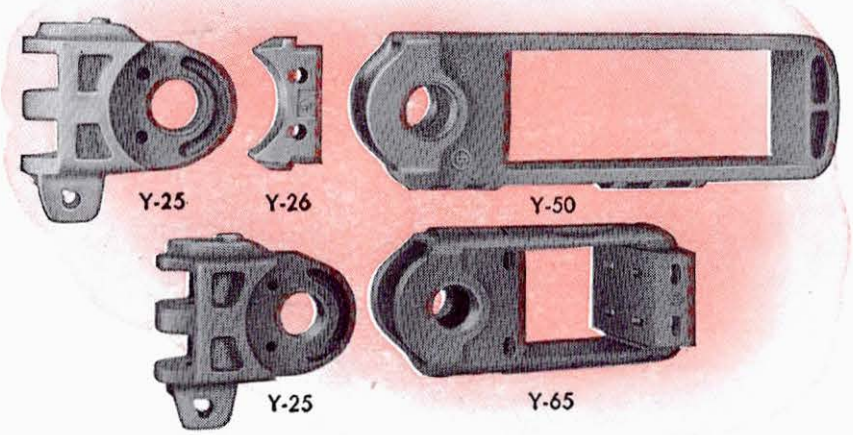


The New York New Haven and Hartford Railroad Co.

The A.A.R. STANDARD TYPE H TIGHTLOCK COUPLER and Attachments

Provide Maximum Comfort and Safety

- No slack in coupler contour.
- Noise caused by coupler slack eliminated.
- Coupler interlock provides maximum safety.
- Improved lock anti-creep protection.
- Wear and Maintenance reduced to a minimum.
- Meet A.A.R. Passenger Car Specifications for strength.



B

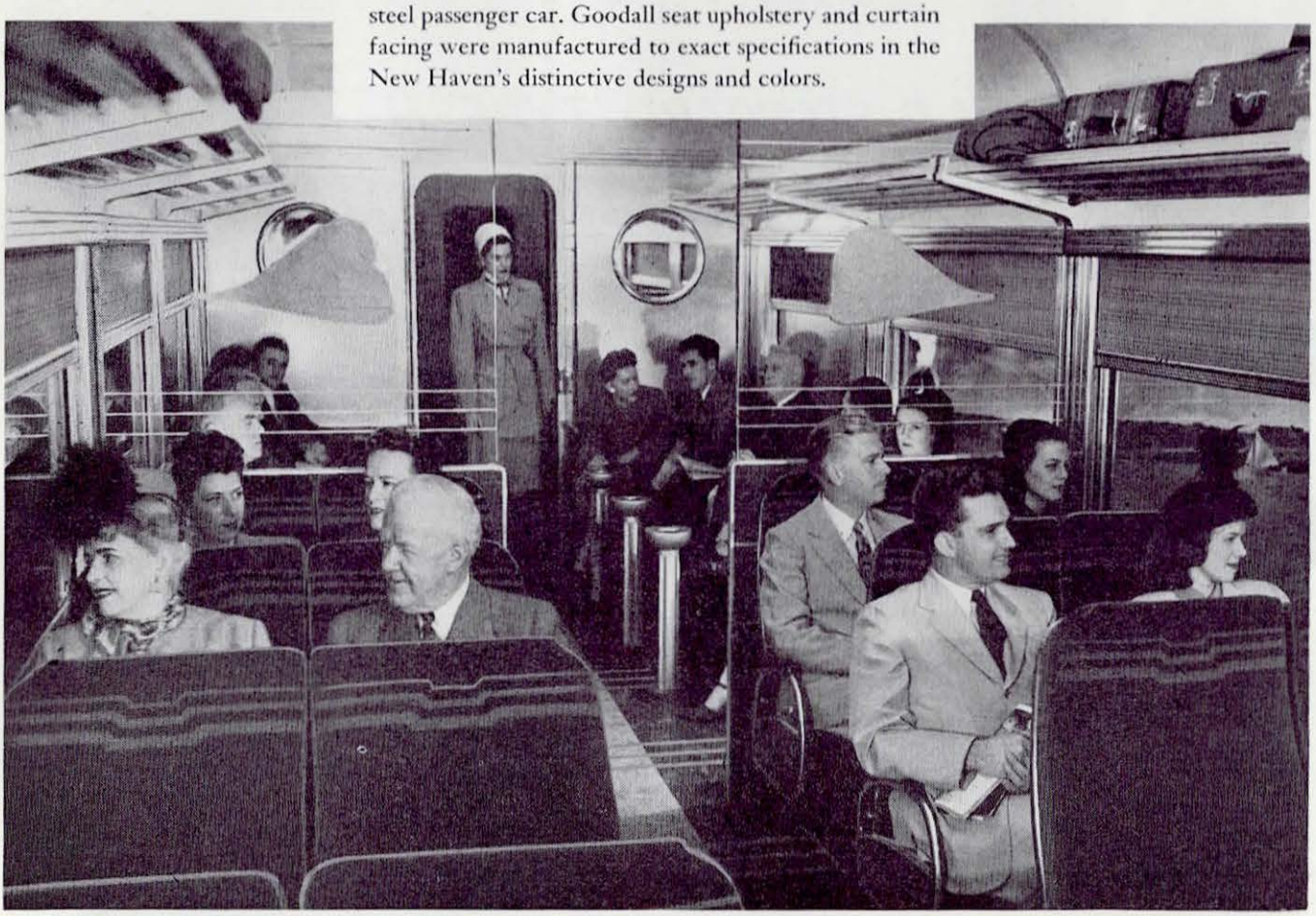
THE BUCKEYE STEEL CASTINGS COMPANY

New York, N. Y. Columbus, Ohio Chicago, Ill.

"TRAVEL TESTED" GOODALL FABRICS

Again specified for new passenger cars

The New York, New Haven & Hartford new stainless steel passenger car. Goodall seat upholstery and curtain facing were manufactured to exact specifications in the New Haven's distinctive designs and colors.



These exclusive Goodall *Blended-for-Performance* Fabrics were styled for the New Haven by industrial designer Lurelle Guild. Goodall Fabrics are the logical choice for railroads—their serviceability gives benefits of longer wear, luxury and ease of maintenance. That is why you will find Goodall from coast to coast, in America's leading trains.

Goodall Fabrics
Subsidiary of Goodall-Sanford, Inc.
THE FINEST NAME IN FABRICS

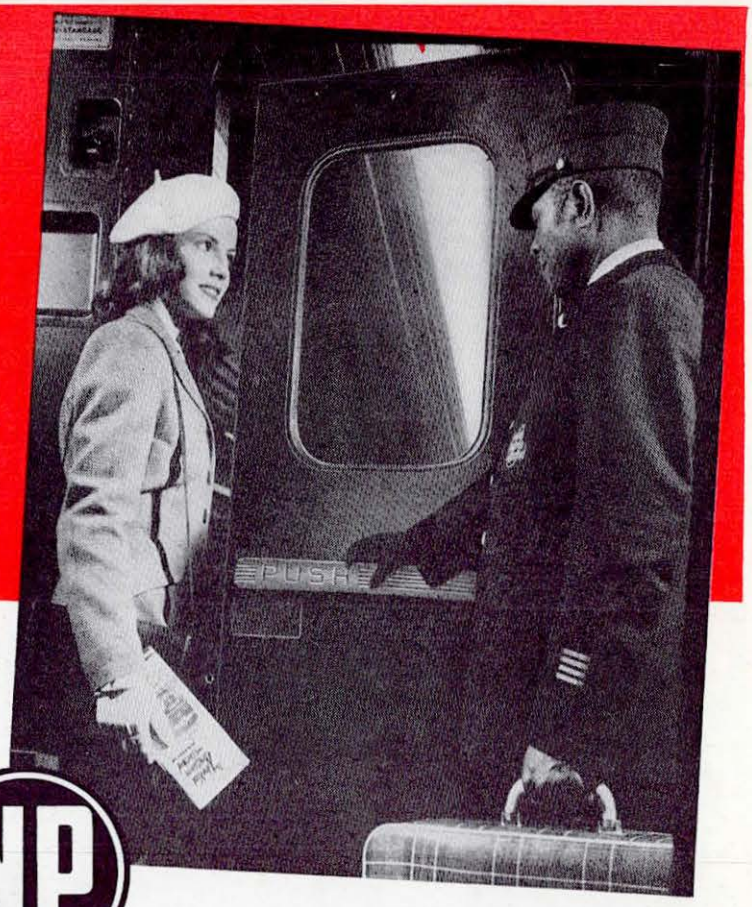
Sole Makers of World-Famous PALM BEACH* Cloth and Suits

*Registered Trade Mark
©1948, by Goodall-Sanford, Inc.

GOODALL FABRICS, INC. NEW YORK • BOSTON • CHICAGO • DETROIT • SAN FRANCISCO • LOS ANGELES

The New York New Haven and Hartford RAILROAD CO.

is equipping 180 new passenger cars

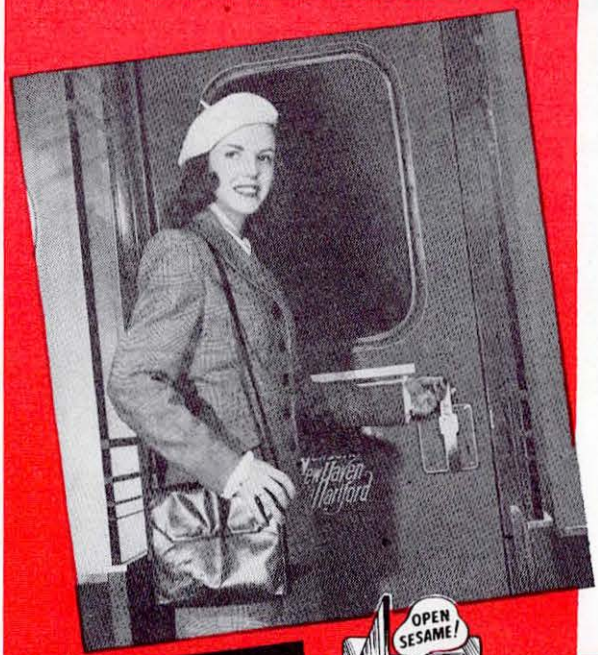


including

- 103 coaches
- 25 parlor chair cars
- 20 combination lounge and baggage cars
- 15 grill cars
- 10 diners
- 5 parlor lounge cars
- 2 tavern observation lounge cars

NP

WITH AUTOMATIC END DOOR OPERATORS



• In designing and building its sleek new passenger cars, the NEW YORK, NEW HAVEN & HARTFORD is making certain that no modern convenience or comfort for passengers is overlooked. For example, the N.P. Automatic End Door Operator — which causes end doors to open at fingertip pressure, and to close automatically!

This bit of inspired magic—with passengers' progress from car to car made completely effortless—is something for even the veteran traveler to write home about. Leading railroads throughout the country recognize the opportunity, and many now are installing N.P. Automatic End Door Operators on both swinging and sliding doors. Adjustable timed action conserves conditioned air within the coaches. Features are fully described in Publication No. 1063. Write for copies.

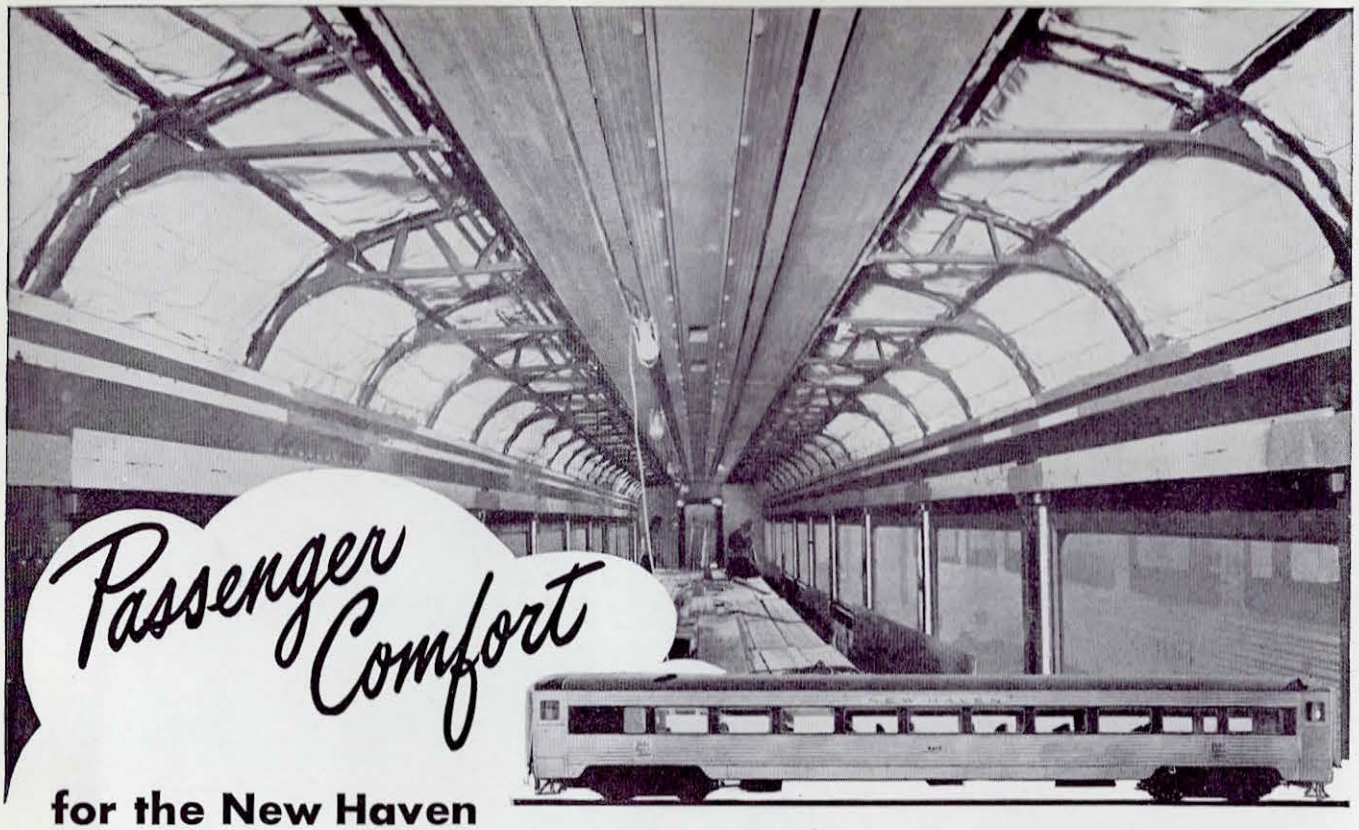
OPENS AT HER *Fingertouch*

NATIONAL PNEUMATIC COMPANY

GRAYBAR BLDG., NEW YORK • McCORMICK BLDG., CHICAGO
RAHWAY, NEW JERSEY

Distributed in Canada by Railway & Power Engineering Corp. Ltd., Toronto

WORLD'S LARGEST MANUFACTURER OF DOOR CONTROL EQUIPMENT FOR MASS TRANSPORTATION VEHICLES



Passenger Comfort

for the New Haven

...sealed-in with Johns-Manville STONEFELT Blanket Insulation

Regardless of weather, passengers enjoy "sealed-in comfort" in the New Haven's streamlined cars, thanks to J-M Stonefelt.

• The New Haven R.R. has ordered 103 new streamlined cars from Pullman Standard, equipped with every modern convenience including constant temperature control, *sealed-in* with the aid of J-M Stonefelt.

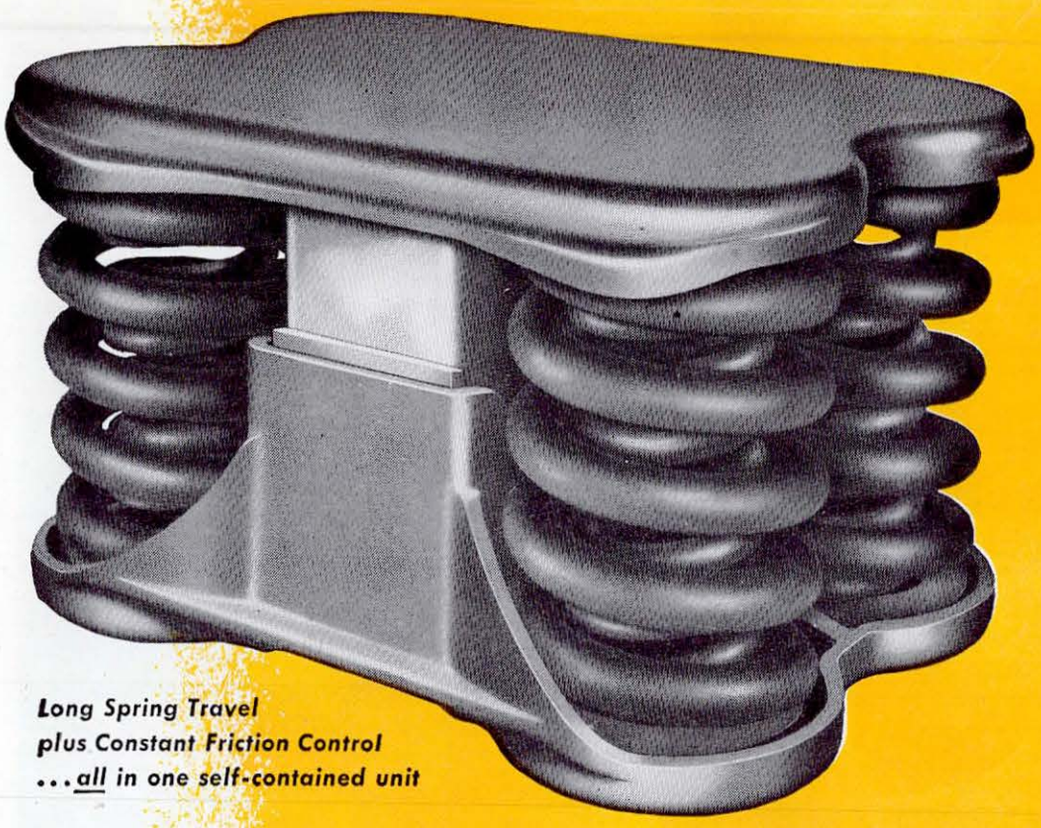
This strong, lightweight blanket insulation resists heat transfer, helps to assure perfect temperature control at lower cost . . . and muffles sound too.

J-M Stonefelt is low in thermal conductivity, high in acoustical efficiency . . . fire-resistant and moisture-resistant. Made of interwoven, specially treated mineral fibers, Stonefelt is exceptionally resilient, retains its rated thickness and will not settle even under severe vibration.

To learn how economically you can obtain added comfort and quiet for travelers in your cars, simply write to Johns-Manville, Box 290, New York 16, New York.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville **90 YEARS OF SERVICE TO TRANSPORTATION**



Long Spring Travel
plus Constant Friction Control
...all in one self-contained unit

makes old trucks easy-riding!

Rough-riding freight car trucks become smooth-rolling, *all-speed* equipment when the AAR coil spring group is replaced by a Ride-Control Package.

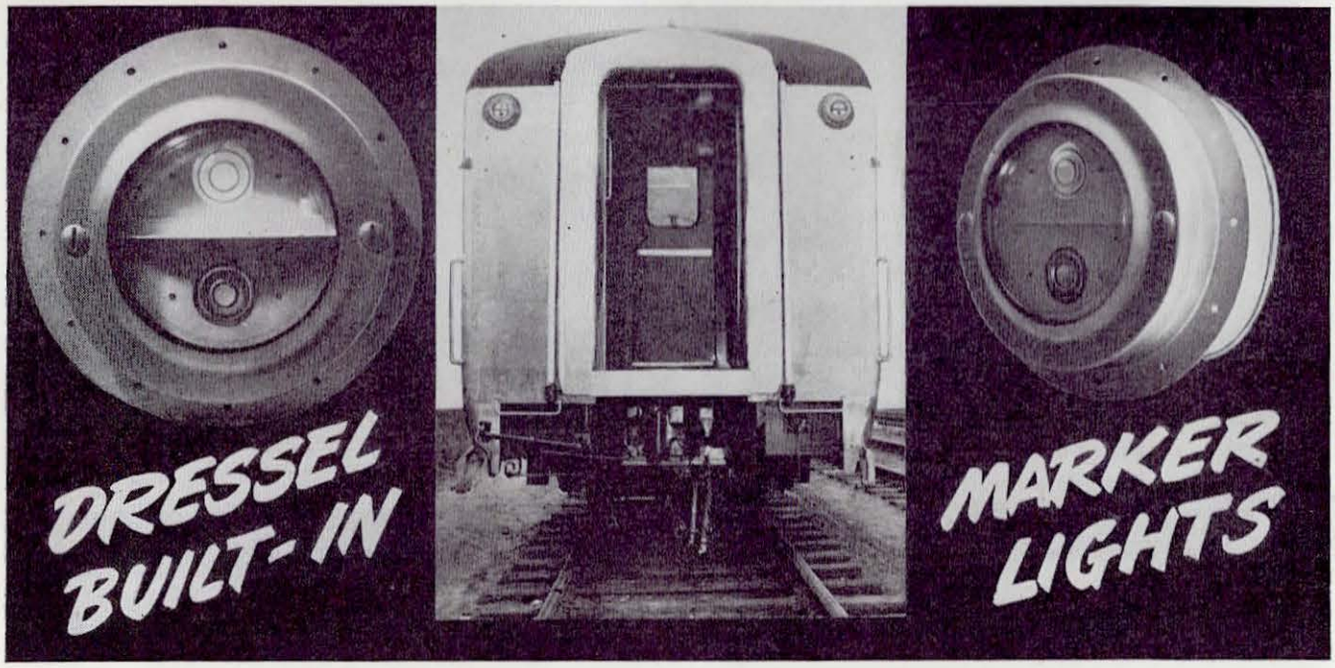
ALL TYPES OF CARS; ALL LOADS

The Ride-Control Package means *performance economy*—easy on roadbed, car, and contents. Ask your A.S.F. Representative for all the interesting facts.

A·S·F *Ride-Control* PACKAGE

AMERICAN STEEL FOUNDRIES
REG. TRADE-MARK OF FINE CAST STEEL

NOW! Standard on New Passenger Equipment for the New Haven



Check These Important Advantages

- Lights permanently installed eliminating damage or loss through handling.
- Modern design in keeping with the appearance of new equipment.
- Change of color indication controlled by the flip of a switch.
- Brilliant indication.
- Easily relamped.
- Low installation and maintenance cost.
- Adaptable to old as well as new equipment.

THE New Haven joins the Pennsylvania and the New York Central in installing Electric Built-in Marker Lights on its ultra-smart new coaches, sleepers, diners and grill cars.

Dressel Built-in Units replace the old style cumbersome oil or electric portable lamps. As furnished to the New Haven, these lights are equipped with two different colored lenses. Change of indication is accomplished electrically by the flip of a switch. These modern, permanently-installed units are adaptable for old as well as new equipment.

The development of these Built-in Marker Lights illustrates our ability to work with the railroads and the carbuilders in producing custom equipment of a specialized nature. Let us help you with your own program.

LOVELL-DRESSEL CO. Inc.

ESTABLISHED 1864

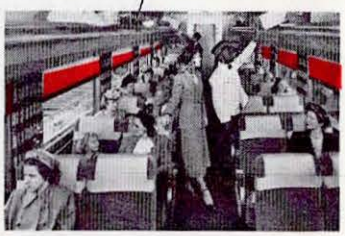
ARLINGTON, N. J.

on the country's leading railroads
in the newest, finest cars

Pantasote Car Curtains

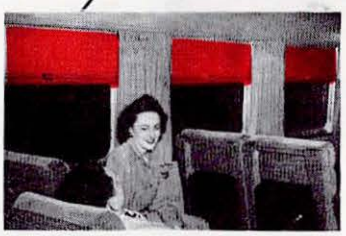
the standard for over 50 years—now better than ever

SANTA FE SUPER CHIEF

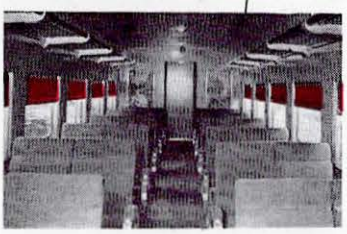


MISSOURI PACIFIC LINES

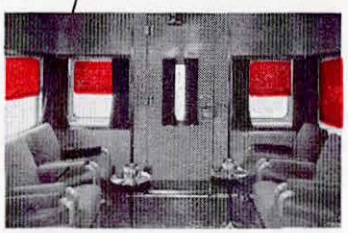
WABASH CITY OF KANSAS CITY



ROCK ISLAND'S THE GOLDEN STATE



NORTHERN PACIFIC R.R.



CHESAPEAKE & OHIO R.R.

NEW YORK, NEW HAVEN & HARTFORD R.R.

THE PANTASOTE COMPANY

Manufacturers of Pantasote's Lifewall, Pantex, Russialoid, Wynsote, Upholstery and Vestibule Curtains, Textasote, Life-Floor and Lifetex

• New York Sales Office—444 Madison Avenue, New York 22, N. Y. •

• Chicago Sales Office—122 S. Michigan Avenue, Chicago 3, Ill. •

You get a clean treatment

with penta chlorophenol

Maintenance men appreciate working on Pentachlorophenol-treated poles, timber and ties. For Pentachlorophenol-treated wood is clean and easy to handle.

The protection that Pentachlorophenol affords is second to none. Pentachlorophenol gives positive, thorough protection against termites and decay. It's a scientific preservative that not only lasts through the years but remains effective *all that time.*

Pentachlorophenol is available now. For tested, lasting preservation treat poles, timber and ties with Pentachlorophenol—the *modern* wood preservative.

3 more Big PENTAchlorophenol Advantages—

1—You know what you're getting with Pentachlorophenol—it is a chemically defined substance that is always the same.

2—Because it is uniform and unchanging, Pentachlorophenol *always* means full strength preservative.

3—Pentachlorophenol treating solution is scientifically controlled—you get measured *positive* preservative action.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

DOW

CHEMICALS INDISPENSABLE
TO INDUSTRY AND AGRICULTURE

Millions of people changed our name

You may think it strange that millions of people could have a voice in changing a company's name, but that is what has happened to The American Rolling Mill Company.

Several years after the company started operations in 1900, it adopted the trademark "ARMCO" for its special grades of steel. The ARMCO trademark —composed of the first letter in each word of the company name—has been widely advertised and appears on all the company's products. Many ARMCO customers identify their use of these special-purpose steels with this familiar trademark.

Through the years—as the original small mill grew into one of the country's great steel companies—our customers, dealers and the public alike have preferred to call the company "ARMCO."

So, in recognition of this preference, the name of the company has been changed from The American Rolling Mill Company to Armco Steel Corporation.

The change is one of name only. It does not affect ARMCO management, personnel and long-established policies. It *does* emphasize more strongly the importance of the ARMCO trademark, and increases its value to those who use ARMCO Special-Purpose steels in the things they make.

The alert research and production men who have perfected so many special-purpose grades of ARMCO steel will continue to improve present steels while developing new ones to help manufacturers build better products for the home, farm and industry.
Armco Steel Corporation, Middletown, Ohio.
Export: The Armco International Corporation.

ARMCO

ARMCO STEEL CORPORATION

THE FAMILIAR ARMCO TRIANGLE IDENTIFIES SPECIAL-PURPOSE STEELS THAT HELP MANUFACTURERS MAKE MORE ATTRACTIVE, MORE USEFUL, LONGER-LASTING PRODUCTS

HOW NEW YORK CENTRAL *Overrules a*

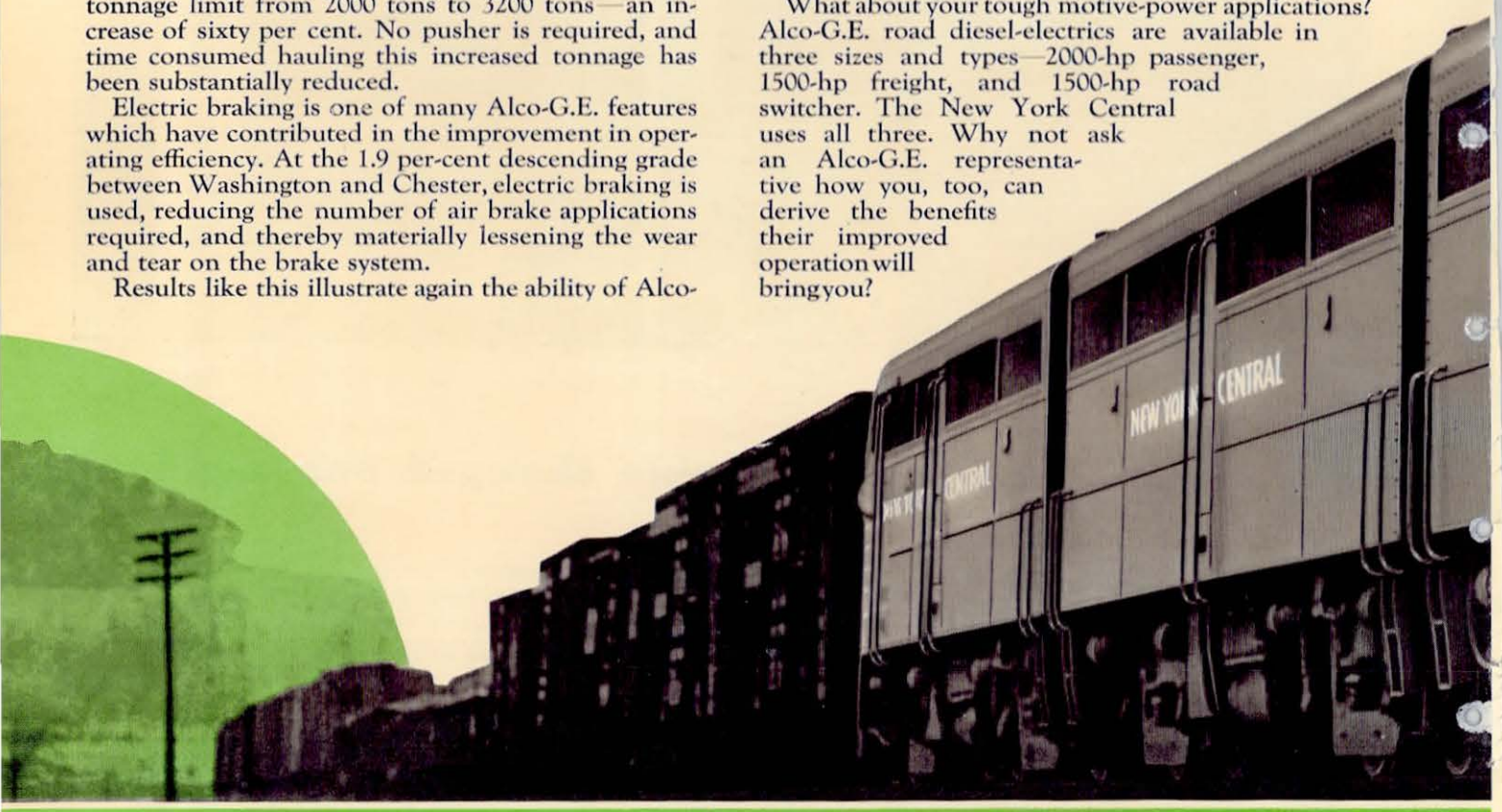
. . . On the Albany Division, Alco-G.E. diesel-electrics boost train tonnage limits sixty per cent!

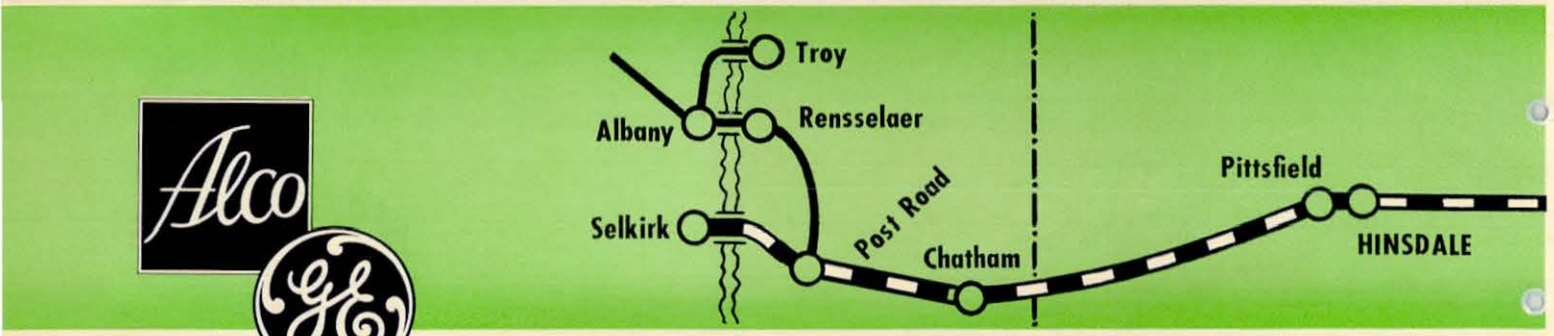
Until recently, freight trains hauled by steam power between Selkirk and West Springfield, were limited to 2000 tons, single-headed, with help required at the 1.6 per-cent Hinsdale grade. Now, three-unit, 4500-hp, Alco-G.E. freight diesel-electrics have raised this tonnage limit from 2000 tons to 3200 tons—an increase of sixty per cent. No pusher is required, and time consumed hauling this increased tonnage has been substantially reduced.

Electric braking is one of many Alco-G.E. features which have contributed in the improvement in operating efficiency. At the 1.9 per-cent descending grade between Washington and Chester, electric braking is used, reducing the number of air brake applications required, and thereby materially lessening the wear and tear on the brake system.

Results like this illustrate again the ability of Alco-G.E. locomotives to haul more ton- and passenger-miles in less time, and at lower cost. With these new locomotives, New York Central's Albany Division is speeding up service to shippers, and strengthening its competitive position.

What about your tough motive-power applications? Alco-G.E. road diesel-electrics are available in three sizes and types—2000-hp passenger, 1500-hp freight, and 1500-hp road switcher. The New York Central uses all three. Why not ask an Alco-G.E. representative how you, too, can derive the benefits their improved operation will bring you?





Alco GE

AMERICAN LOCOMOTIVE

Ruling Grade

Built **TO INCREASE YOUR RAILROAD'S EARNING POWER**

W. Springfield ——— To Boston

In Canada Alco GE is MLW GE

and GENERAL ELECTRIC

113-220

Cylinder liners

IN THIS DIESEL WILL

never need reboring!

That's right! The *cylinder liners in this Diesel locomotive never will need reboring* to oversize! No oversize pistons or rings ever will be needed. Stores inventory and handling costs will be cut accordingly.

The reason is Van der Horst PORUS-KROME*. Cylinder liners processed with PORUS-KROME were installed by the engine builder. As original equipment, PORUS-KROME will extend liner life by 400 per cent or more—cutting maintenance costs and increasing availability.

More and more Diesel engine builders and users are adopting PORUS-KROME liners as standard practice. First, because PORUS-KROME greatly extends life of the original equipment. Then, if the need ever occurs, liners can easily be restored to original bore, merely by reprocessing. *Maintenance savings multiply with* PORUS-KROME!

Before you buy or oversize another liner—write for the facts about PORUS-KROME! And—ask for the names of leading Diesel builders who now incorporate PORUS-KROME as standard equipment.

* * *

*PORUS-KROME is dense, hard, wear and corrosion-resistant chromium applied by the exclusive Van der Horst process which gives working surfaces an infinite number of tiny oil-retaining reservoirs for perfected lubrication.

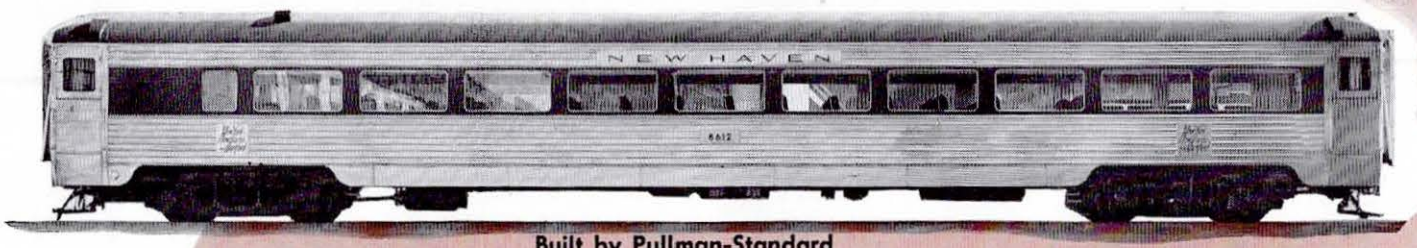
VAN DER HORST CORPORATION OF AMERICA • OLEAN, N. Y.

PORUS - KROME

Good for the Life of your Engines

VAN DER HORST TRADE MARK

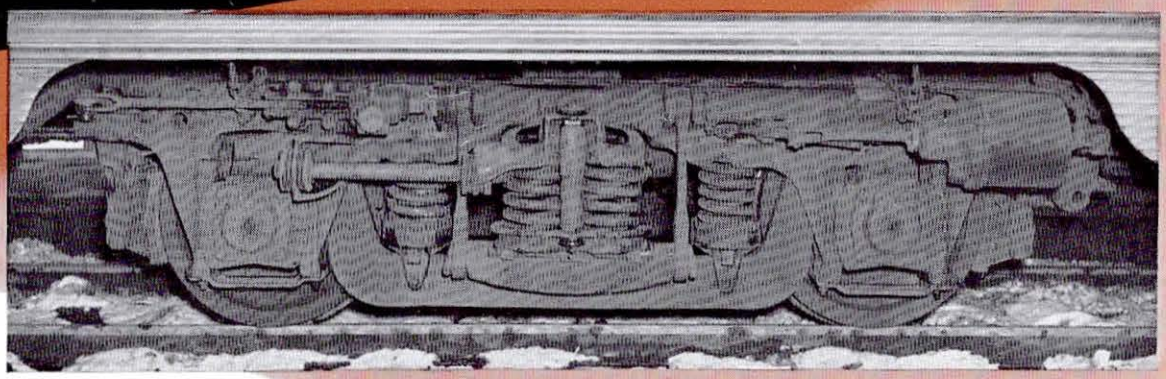
U. S. PATENTS 2,048,578, 2,314,604 AND 2,412,694



Built by Pullman-Standard

207 New Passenger Cars for the New York New Haven and Hartford are equipped with

COMMONWEALTH Passenger Car Trucks



A new fleet of luxurious passenger cars for the New York, New Haven & Hartford R. R. is now being delivered. 180 of these cars will be equipped with COMMONWEALTH 4-wheel trucks and 27 with COMMONWEALTH 6-wheel trucks. All trucks are arranged with all-coil springing, outside swing hangers and bolster anchors.

- These modern trucks include COMMONWEALTH one-piece alloy cast steel truck frames and bolsters, providing great strength with light weight, and unusually long service life with low maintenance.
- The many refinements in design of COMMONWEALTH passenger car trucks assure the best possible riding qualities with greater passenger comfort and safety.

GENERAL STEEL CASTINGS

GRANITE CITY, ILL. • EDDYSTONE, PA.

FABREEKA

USED IN 64 APPLICATIONS ON EACH OF The New York New Haven and Hartford 103 NEW DELUXE COACHES

To assure comfort with safety and dependability to its millions of passengers the New York, New Haven and Hartford Railroad specified Fabreeka Pads to reduce noise, isolate vibration, and absorb impact shock on these new deluxe coaches manufactured by the Pullman Standard Car Manufacturing Company at Worcester, Mass.

4 FABREEKA SIDE STEM BUSHINGS

4 FABREEKA STEEL SIDE STEM WEAR PLATE PADS

8 FABREEKA JOURNAL BOX PADS

16 FABREEKA STEEL UNIT FOR EQUALIZER SPRINGS

4 FABREEKA BODY SIDE BEARING PADS

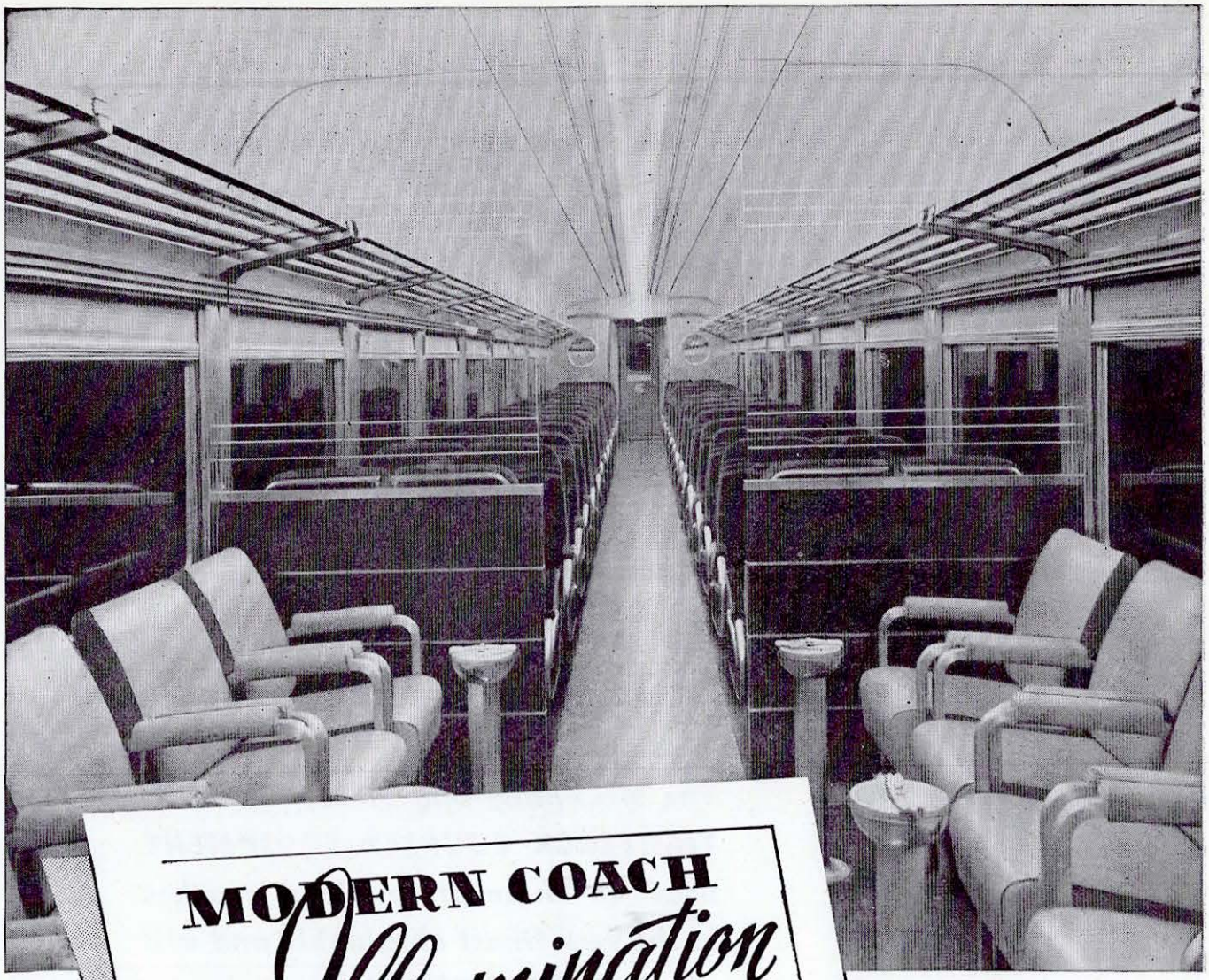
8 FABREEKA BOLSTER SPRING PADS

16 FABREEKA BODY SIDE BEARING BUSHINGS

4 FABREEKA BOLSTER BUMPER PADS

FABREEKA PRODUCTS COMPANY
INCORPORATED
222 SUMMER STREET, BOSTON 10, MASS.
NEW YORK PHILADELPHIA DETROIT SPARTANBURG CHICAGO

It Pays To Specify Fabreeka



MODERN COACH *Illumination*

. . . cheerful abundant glareless

A distinctive feature of this modern *New Haven coach* is the comfortable lighting supplied by Safety Continuous Fluorescent Lighting Trough, with "Safety 68" Plastic Shades. Designed with knowledge of the problems of railroad passenger car lighting, and constructed to withstand the rigors of railroading, SAFETY COMPANY LIGHTING FIXTURES are easily installed, readily serviced and inexpensively maintained. The coach has Safety Conditioned Air Distributors to control the distribution of air throughout the car. The system eliminates drafts, distributes air uniformly both lengthwise and across the car. The distributor is designed to harmonize with the coach decorative plan.

OUR SIXTY-SECOND YEAR LIGHTING AMERICA'S RAILROADS

THE SAFETY CAR HEATING AND LIGHTING COMPANY INC.

NEW YORK · CHICAGO · PHILADELPHIA · ST. LOUIS · SAN FRANCISCO · NEW HAVEN · MONTREAL

SAFETY COMPANY PRODUCTS INCLUDE: Complete Air-Conditioning Equipment • Genemotors • Generators • Fans • Regulators • Lighting Fixtures • Switchboards • Parcel Racks • Generator Drives • Motor Alternators

Congratulations NEW HAVEN!

IT WAS OUR PRIVILEGE TO CO-OPERATE WITH YOU

The McConway and Torley TIGHTLOCK COUPLER EQUIPMENT used on these streamlined coaches is the very finest obtainable and will give years of satisfactory service.

Complete Coupler and Yoke Assembly

McCONWAY & TORLEY CORPORATION

109-48th STREET, PITTSBURGH, PA.

Chicago **St. Louis** **San Francisco**

DEPENDABLE
POWER

No let-downs with *EXIDE-IRONCLAD BATTERIES*

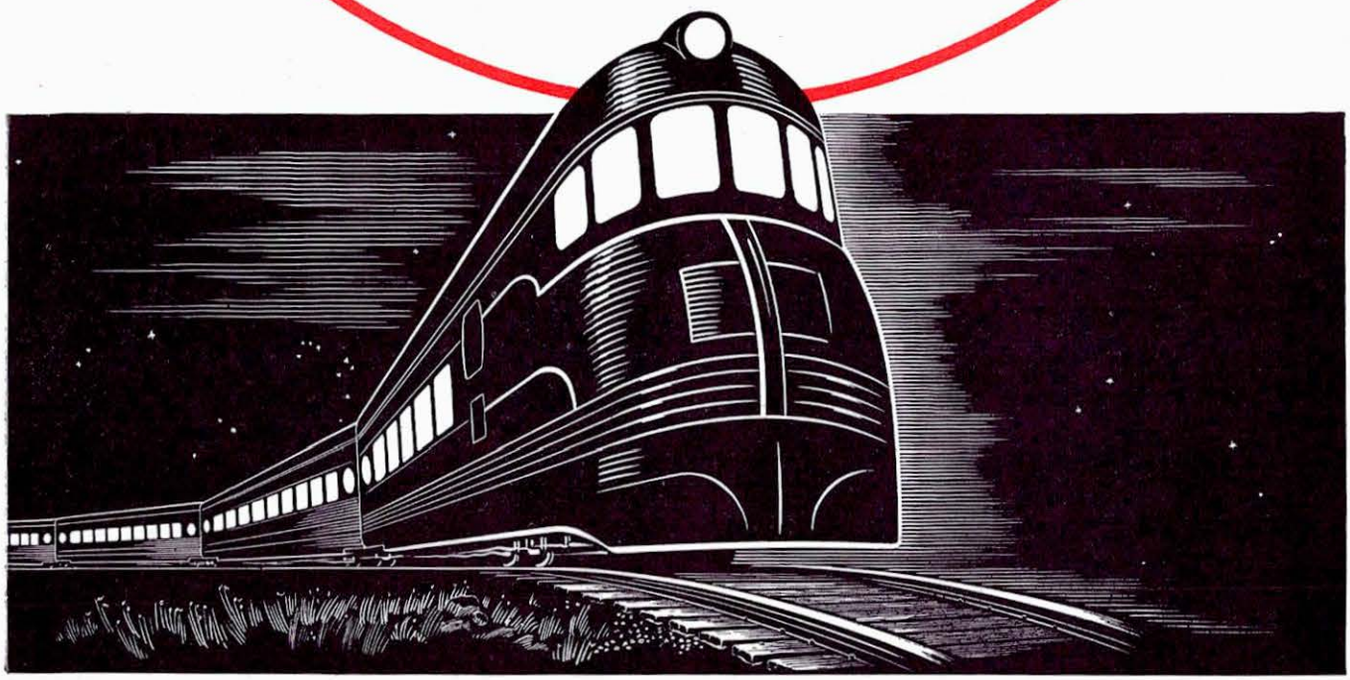
Thousands of railroad passenger cars are equipped with Exide-Ironclad Batteries to assure smooth operation of air-conditioning units and to keep lights bright . . . even during long stops. And Diesel locomotives, from the roaders to switchers, rely on Exide-Ironclad Batteries for dependable, day-in-day-out cranking power.

Exide-Ironclad Batteries differ from all other batteries . . . in design, construction, service qualities. One important difference is in the positive plate, which consists of a series of slotted tubes containing the active material. These slots are so small that, while they permit easy access of the electrolyte, they retard the active material from readily washing out or jarring loose.

That means . . . HIGH POWER ABILITY, HIGH ELECTRICAL EFFICIENCY, RUGGEDNESS and LONG LIFE—four vital characteristics of a quality storage battery. Only Exide-Ironclad Batteries have ALL FOUR.

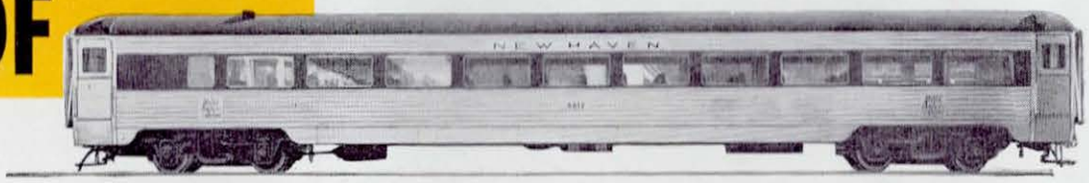
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32

Exide Batteries of Canada, Limited, Toronto



Ten years and 416 Cars

PROOF



# of GREASE LUBRICATION

WHAT? Run a railroad without hot boxes, without liberal applications of the traditional oil can? Tradition or no, back in 1937 the New Haven figured a railroad was too big a business to be run by squirt and by guess lubrication. Wouldn't *grease* be cleaner, longer lasting, more economical and afford better protection?

For months Fafnir and New Haven engineers were up to their eyebrows in greases . . . trying to find a grease that would take everything and do everything . . . any time and all the time. They finally found it . . . a grease much more stable than any car oil, maintaining a constant torque over a much longer temperature range with no evaporation loss at the highest operating temperature and still plastic at temperatures to 40° below zero.

So New Haven started immediately to switch to Fafnir grease-lubricated bearings. Before long 209 cars were proving these grease-lubricated bearings stayed cleaner, lasted longer and cut maintenance to the bone.

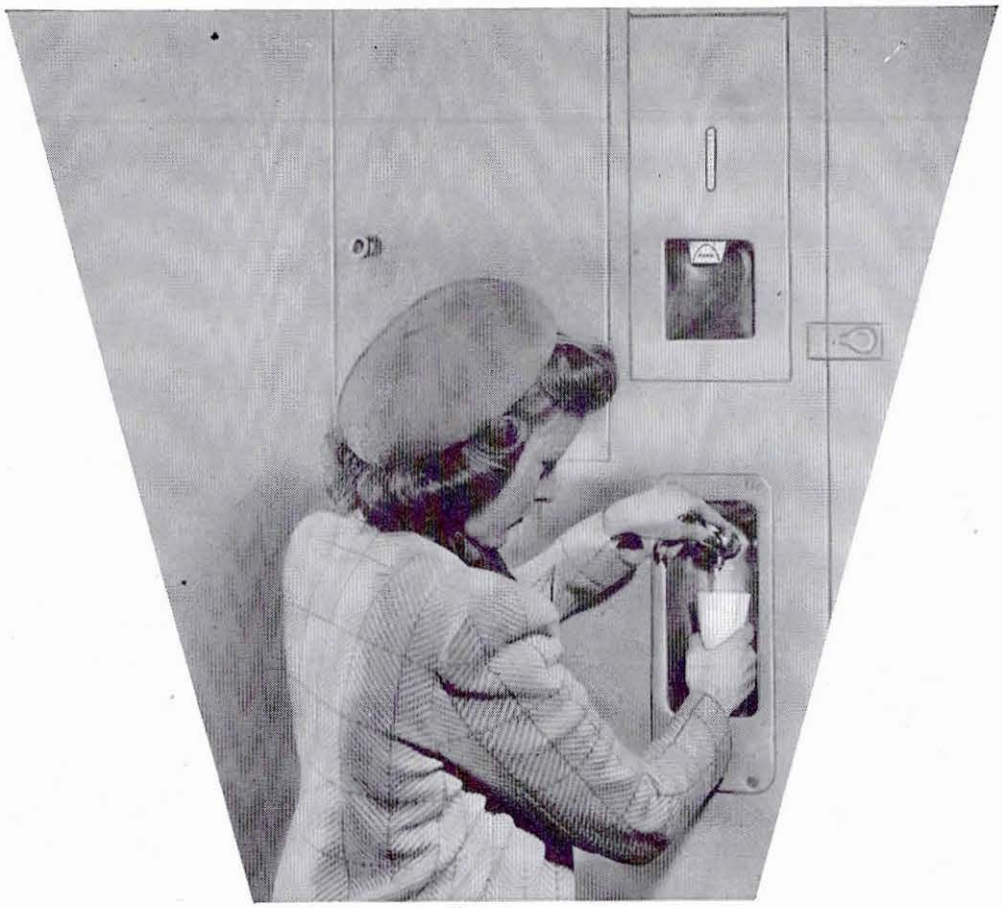
Clinching proof was the recent order by New Haven to Pullman-Standard for 207 new, streamlined cars each equipped with these performance-tested Fafnirs. Ten years and 416 cars are proof enough for anyone.

Other roads have switched to Fafnirs after similar experience. They all agree that no railroad has maintenance manhours to waste, today.

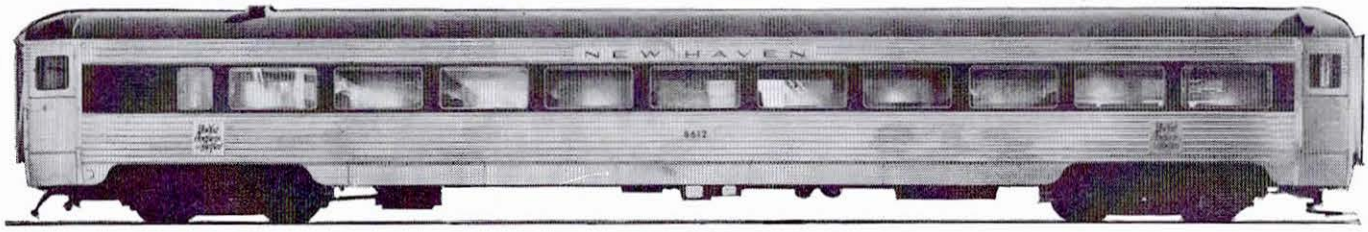
All the facts and all the help you need are yours for the asking from Fafnir's experienced Railway Engineering Department. Write for descriptive bulletin. The Fafnir Bearing Company, New Britain, Conn.

All models of Fafnir Ball & Roller Journal Bearings are available for either oil or grease lubrication.

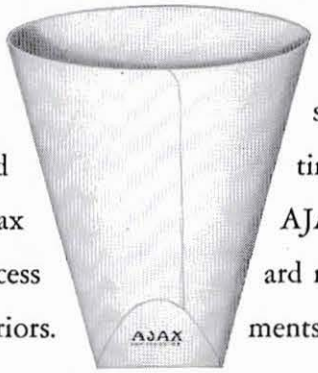
FAFNIR BALL & ROLLER JOURNAL BEARINGS



WITH NEW HAVEN • • IT'S AJAX



Passenger comfort and convenience were first in consideration when the New Haven Railroad ordered its 103 new streamlined coaches. So, for drinking water service Ajax equipment was a natural choice . . . the recess dispensers are styled for modern car interiors.



AJAX Paper Drinking Cups are always the same . . . crisp and clean; dispensed one at a time; easy to hold, even on speeding trains. AJAX Dispensers are available either in standard models or designs for specific car requirements. Let our engineers help solve *your* problem.

RC-82

UNITED STATES ENVELOPE COMPANY

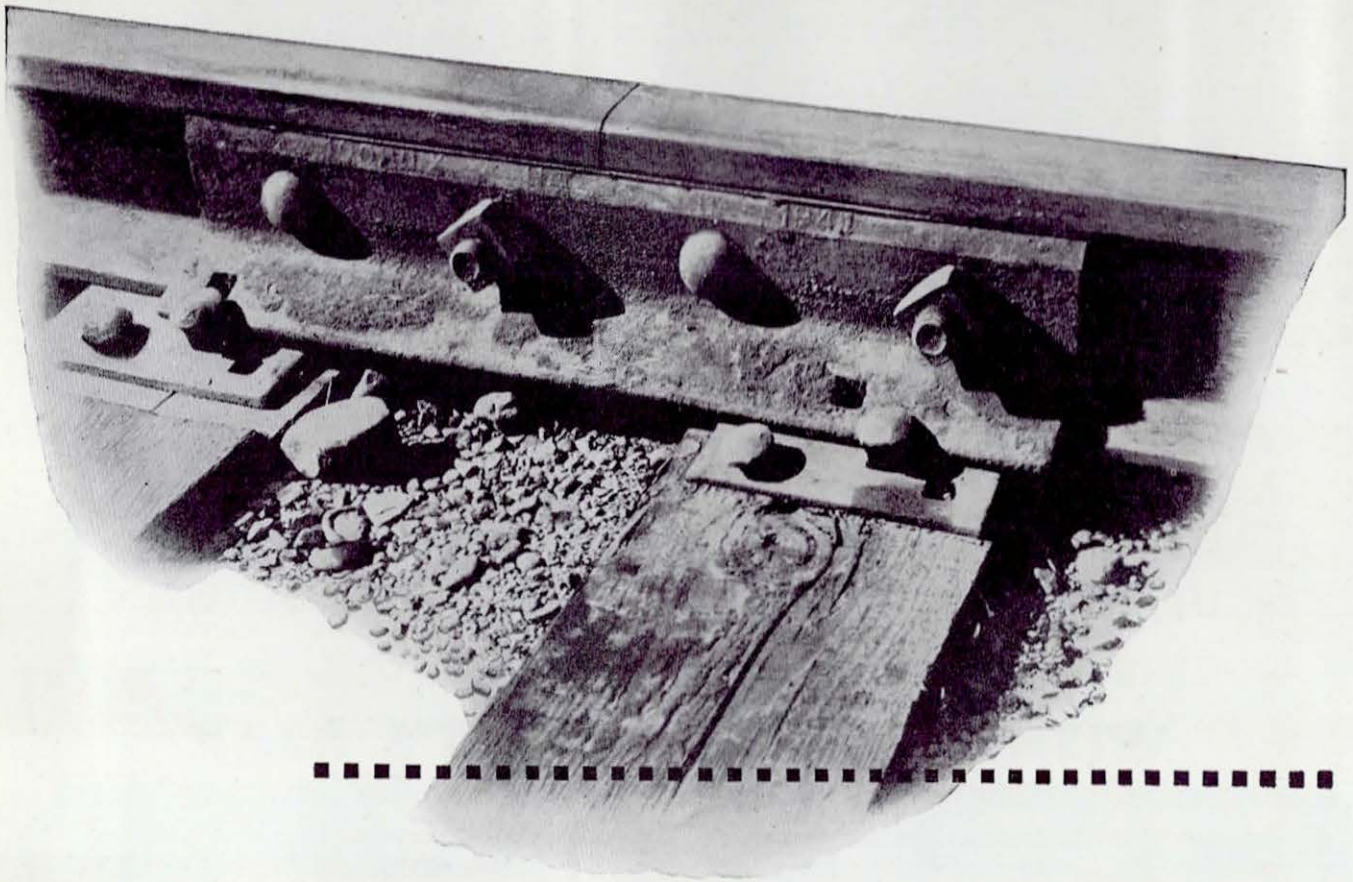
PAPER CUP DIVISION • WORCESTER 5, MASS.

Los Angeles Division **San Francisco Division**

AERO AJAX

PAPER DRINKING CUPS

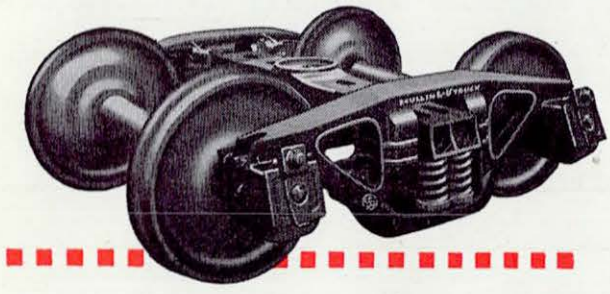
THIS is where destructive bounce and sideway begins...



AND THIS is the SCULLIN L-V TRUCK

LATERAL VERTICAL
CUSHIONED MOTION

that completely cushions both lateral and vertical motion before it can cause damage... makes high speed safe for lading, cars and track.



STEEL CASTING MANUFACTURERS · SINCE 1899 ·

SCULLIN STEEL CO.

SAINT LOUIS 10, MISSOURI

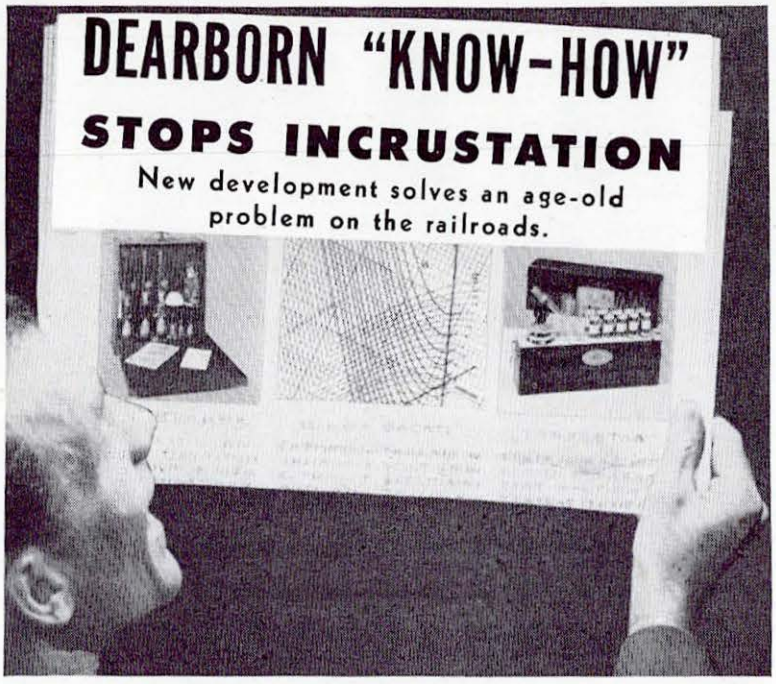
NEW YORK • CHICAGO • CLEVELAND • BALTIMORE • RICHMOND, VA. • MEXICO CITY, D. F.

Do You Want to Stop...

INCRUSTATION

In Water Distribution Systems, Injectors, etc.?

Then Read This!



Pipe Lines Cleaned Without Interrupting Service

This Dearborn development provides a method for cleaning pipe lines in distribution systems and encrusted locomotive appurtenances while in service. This eliminates taking up pipe lines regularly for cleaning or shopping locomotives to clean feed lines.

Incrustation . . . an outgrowth of unstable boiler feed water . . . has been only partially solved at best . . . but now Dearborn offers a scientific GUIDE in the selection and use of chemicals to guarantee the control of calcium formation and other deposits.

Guess Work Now Replaced by Scientific Certainty

Now, by practical adaption of complex calculation and charts supplemented by measurements, simple tests in the field, the effectiveness of the control and removal of incrustation can be established. In use on several railroads, this new technique is preventing incrustation and providing the means for removing old deposits from pipe lines.

Dearborn
TRADE MARK REGISTERED

"THE *Leader* FOR OVER 60 YEARS"

ENGINEERING SERVICE AND WATER TREATMENT

Dearborn Chemical Company

310 S. Michigan Ave., Chicago 4 — 807-15 Mateo St., Los Angeles
205 E. 42nd St., New York — 2454 Dundas St., West, Toronto

Dearborn Chemical Company
Dept. T, 310 S. Michigan Ave.
Chicago 4, Illinois

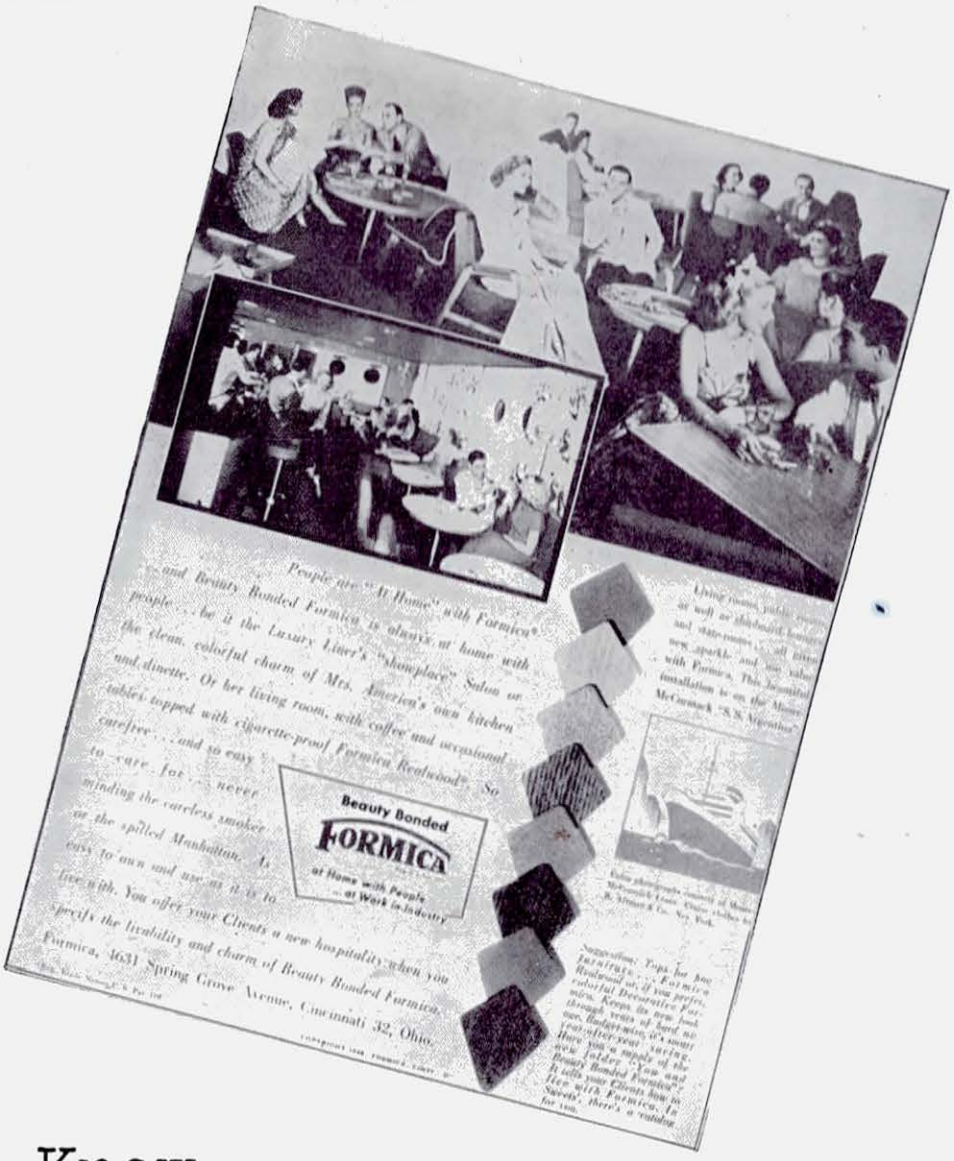
☐ Please send data on the Dearborn Method of Incrustation Control

Name..... Title.....

Company .....

Street .....

City..... State.....



Do You Know...

what 129,700 designer readers know about the use of Beauty Bonded Formica to surround the traveler with practical, cheerful luxury?

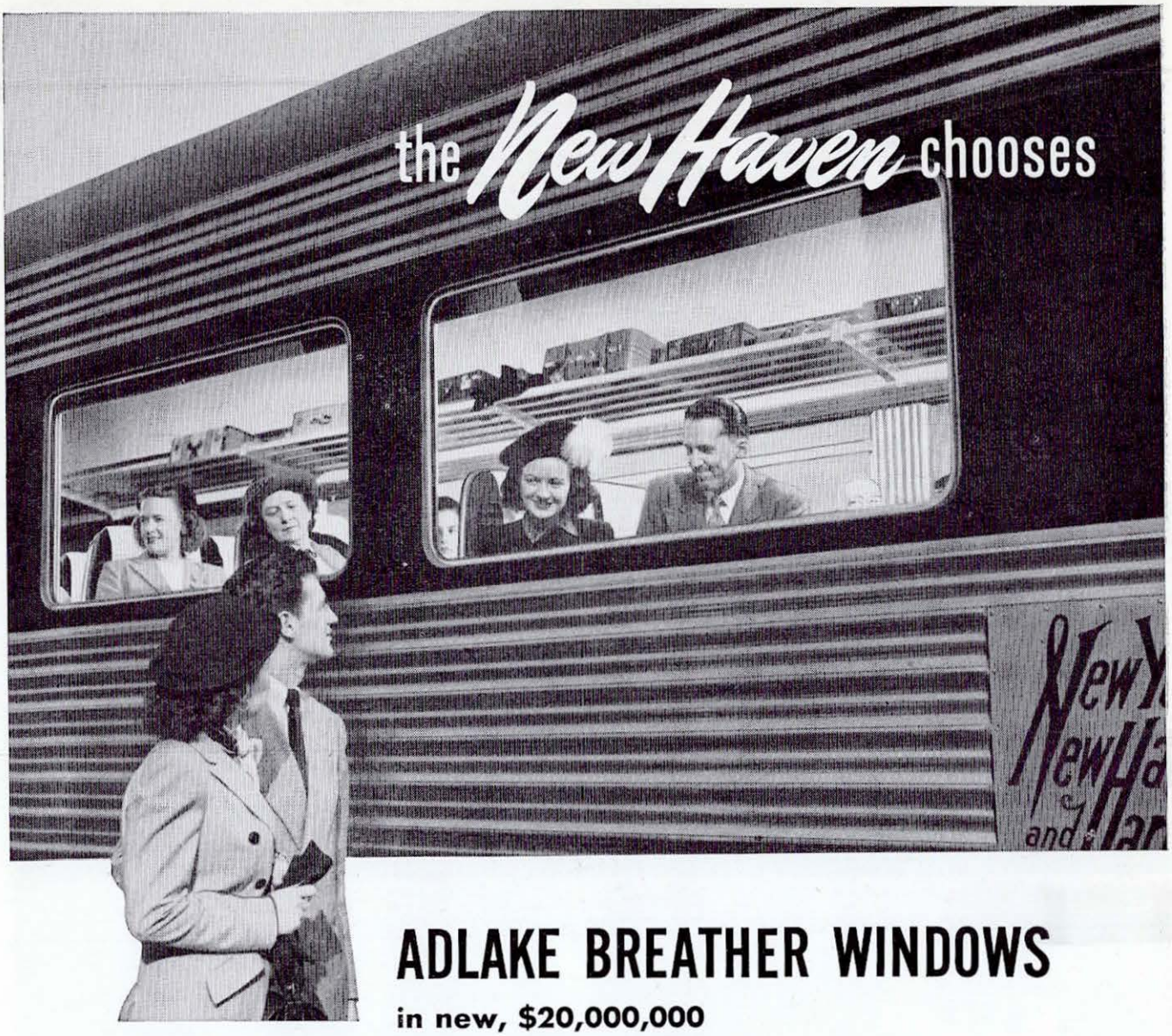
In beautiful full color, this Formica decorative story is being told in current issues of architectural magazines.* Designers will be talking to you in terms of Formica for the trains of today and tomorrow. You'll want the latest information on Formica, at Home with People on land and sea.

Write for color reprints of this advertisement, together with pictorial story of Beauty Bonded Formica. Formica, 4509 Spring Grove Avenue, Cincinnati 32, O.

* ARCHITECTURAL FORUM
ARCHITECTURAL RECORD
PROGRESSIVE ARCHITECTURE
ARTS AND ARCHITECTURE
INTERIORS

Guaranteed by Good Housekeeping

Beauty Bonded
FORMICA
Reg. U. S. Pat. Off.
at Home with People
at Work in Industry



ADLAKE BREATHER WINDOWS

in new, $20,000,000 modernization program

NEW, DELUXE COACHES AND PARLOR CARS like the one above are featured in THE NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COMPANY'S new $20,000,000 improvement program. Built by Pullman-Standard, the new coaches and parlor cars are the last word in sleek, modern, comfortable cars with stainless steel exteriors.

No small part of passenger comfort on these modern coaches and parlor cars is due to the Adlake Breather Windows which give a panoramic view of the beautiful New England landscape through these clear, brilliant, nonglare windows.

The patented "breather" keeps air between the two panes of glass adjusted to all temperature changes, keeps dust, dirt and cinders *out!* The "breather" banishes the need for troublesome dehydrants and drying compounds. What's more, if panes are accidentally broken in service, *only the broken glass* needs replacement—not the entire unit!

"Let them see the scenery YOU advertise" —through Adlake Breather Windows. For looks, service and passenger enjoyment, you can't do better! For more details on construction and applications, write us at 1109 North Michigan, Elkhart, Indiana.

THE Adams & Westlake COMPANY

Adlake TRADE MARK

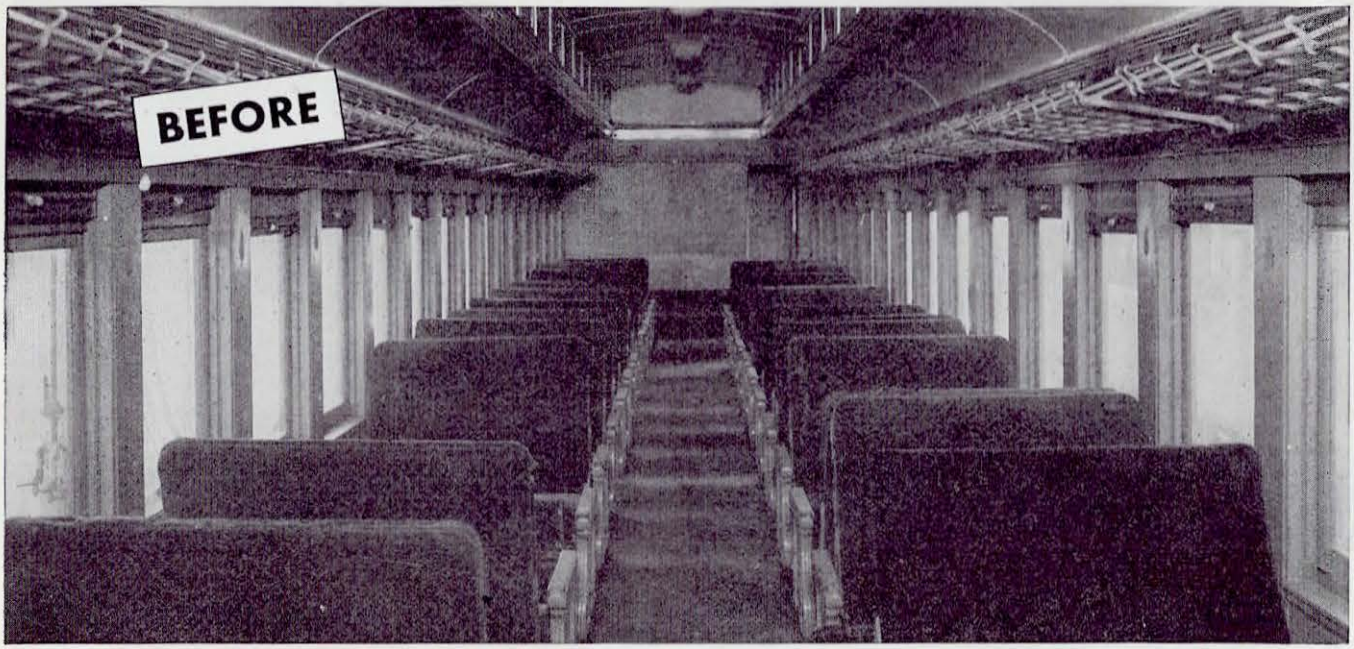
Established 1857 • ELKHART, INDIANA • New York • Chicago

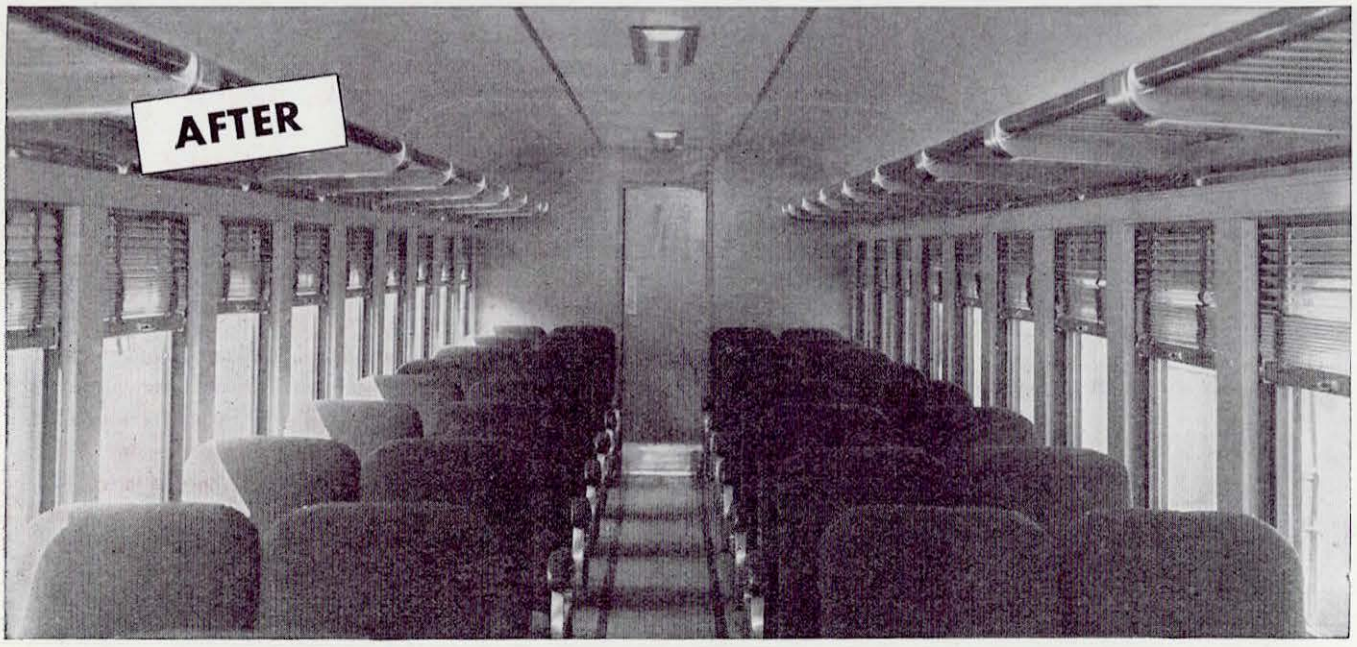
Manufacturers of Adlake Specialties and Equipment for Railway, Airway and Waterway

Plymetl

. . . REVOLUTIONIZES RENOVATING

Here is how Gulf, Mobile and Ohio gives old coaches new passenger appeal . . . by renovating with Haskelite PLYMETL. For unique PLYMETL drastically cuts dead weight . . . deadens sound and vibration . . . beautifies . . . and reduces fabricating time. The remarkable improvement shown by the photographs below illustrates how car builders use light-weight PLYMETL for bulkheads, interior partitions and transoms (type UVU) and for doors (type EVE). For rebuilding the old or building the new, specify Haskelite PLYMETL. Send TODAY for complete new bulletin on this challenging material of opportunities.





HASKELITE

MANUFACTURING CORPORATION

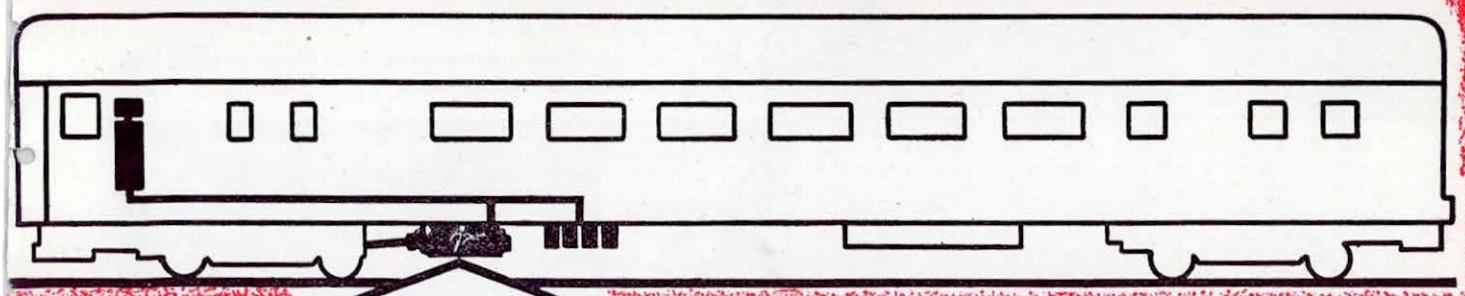
DEPT. RR GRAND RAPIDS 2, MICHIGAN

NEW YORK CHICAGO DETROIT CLEVELAND ST. LOUIS LOS ANGELES PHILADELPHIA BOSTON

CANADA: Railway and Power Engineering Corp., Ltd.

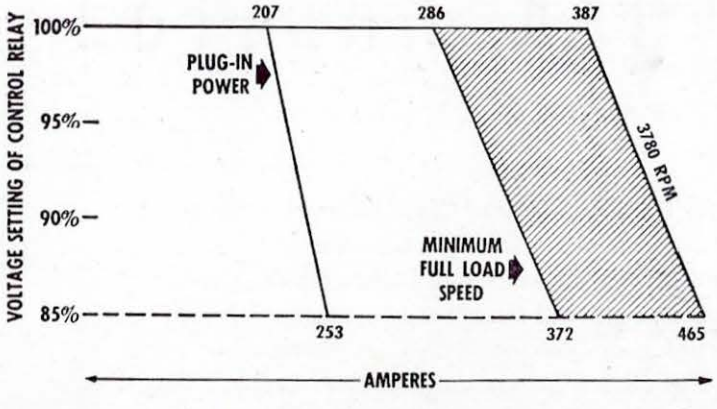
WHY THE NEW HAVEN SPECIFIED

GE Power Supply



TYPICAL CURVE

GENERATOR AND CONTROL



New Deluxe Coaches Equipped With GMG-150-A4 Motor Generators

One of the "unseen" features of the New Haven Railroad's new fleet of deluxe coaches is the G-E body-mounted, axle-driven motor generator. This sturdy low-maintenance equipment supplies full output over a wide range of train speeds, therefore reducing demands on battery power. At the same time, these motor generators will charge low batteries at an unusually high rate. In this way, fewer standby rechargings are required.

This is made possible by the control system on these G-E motor generators which permits normal "current limit" to *increase* as the car speed increases. It permits additional current output above this variable "current limit" if the battery voltage is below normal. (See shaded area in the curve, left.)

Because they are specially designed and sturdily built for rugged service and low maintenance, these sets, available in four different ratings, are finding wide application on such railroads as the New Haven. Why not ask your G-E representative for more information about these new motor generators and how they might best be applied on your passenger cars?

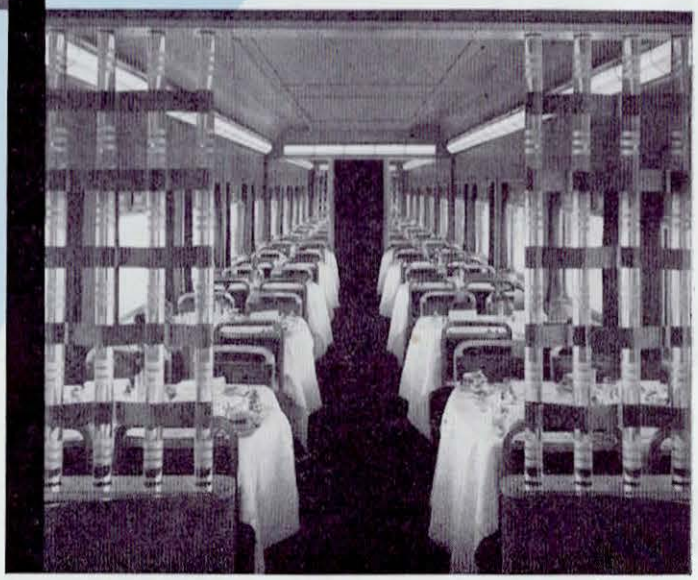
GENERAL ELECTRIC

You can put your confidence in

Engineered Electrical Systems

◀ Parlor Observation coach on the City of Kansas City has high intensity fluorescent light on the aisle, tables, ceiling and upper wall of car, diffused light in seating zone with individually controlled reading lights for passenger convenience.

Dining Car has a continuous illuminated lensed cornice providing high ▼ intensity fluorescent light on tables.



Has your train

GOOD PASSENGER HABITS?

Wabash Railroad's new City of Kansas City, built by American Car & Foundry, caters to its passengers with Luminator Streamlighting that satisfies the individual train habits of passengers. Both fluorescent and incandescent lighting are utilized in Luminator-designed structures to achieve maximum lighting efficiency as well as unusually attractive interior design. Low brightness center light in coaches induces relaxation. Individually controlled reading lights provide high intensity light that is glareless and shadowless for reading purposes. In buffet and dining cars there is high intensity light on table areas while enameled portions of the lenses provide soft diffused light for general room illumination.

LIGHTING ENGINEERS • DESIGNERS • MANUFACTURERS

LUMINATOR inc.

120 NORTH PEORIA STREET • CHICAGO 80, ILLINOIS

THE NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COMPANY

HOWARD S. PALMER, JAMES LEE LOOMIS, HENRY B. SAWYER, TRUSTEES

C. E. SMITH
VICE PRESIDENT
SM

NEW HAVEN 6, CONN., April 28, 1948

Mr. George E. Cornwall, Sales Manager
Transportation Seating Division
Heywood-Wakefield Company
Gardner, Massachusetts

Dear Mr. Cornwall:

The coach seats which your firm made for our new coaches have been in service long enough now to get some positive and conclusive reactions from both our own people and from NYNH&H riders.

These Heywood-Wakefield coach seats are expertly designed which indicates close cooperation between your craftsmen and our own engineers. Not a single instance of poor workmanship has been brought to my attention by those who keep the cars in good maintenance.

Patrons of our railroad, in both unsolicited comments and in response to inquiry, have praised the comfort attributes of the seats without exception. It is apparent that you have supplied us with well-engineered seats in which none of the comfort advantages have been lost or overlooked.

Very truly yours,

C. E. Smith

New Comfort for New Haven Passengers

Experience of both railroads and passengers alike proves that Heywood-Wakefield seats not only look the part, but play an active part in adding to the comfort of travelers. Arrange today to learn the full advantages of the wide range of Heywood-Wakefield seating for your new or modernized equipment.

HEYWOOD-WAKEFIELD
EST. 1826
REG. U. S. PAT. OFF.

Transportation Seating Division
Gardner, Massachusetts

UNION PACIFIC

The Governor of California *invites You*

State of California
GOVERNOR'S OFFICE
SACRAMENTO

EARL WARREN
GOVERNOR

To American Industry:

In California we are currently celebrating the centennial anniversaries of the beginnings of our State. We gain much inspiration from our review of the progress which has been made in the comparatively short span of one hundred years.

During the past eight and one-half years alone California's population has increased by 47 per cent and our industry and agriculture have risen to positions of great importance in the economic life of the nation.

Our tremendous reserves of natural resources and our strategic world trade position on the shores of the Pacific Basin assure California's continued progress in the years to come.

I am happy, therefore, to join in inviting you to investigate the opportunities for expansion which exist in the many communities of our State.

Sincerely,

Governor

Earl Warren

* One of a series of advertisements based on industrial opportunities in the states served by Union Pacific Railroad.

Unite with Union Pacific in selecting sites and seeking new markets in California, Colorado, Idaho; Kansas, Montana, Nebraska, Nevada, Oregon, Utah, Washington, Wyoming.

*Address Industrial Department, Union Pacific Railroad
Omaha 2, Nebraska

UNION PACIFIC RAILROAD

Road of the Daily Streamliners

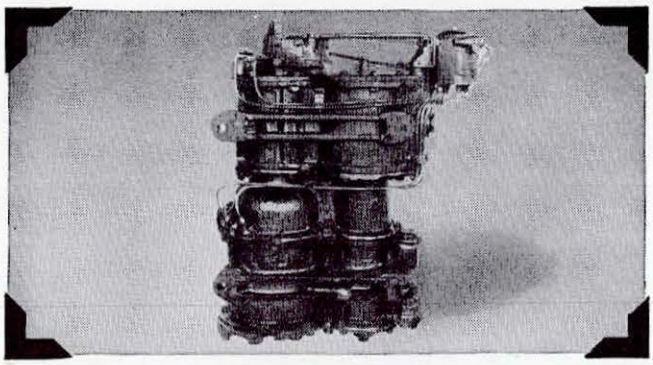
STANDARD ENGINEER'S REPORT

RPM CALOL

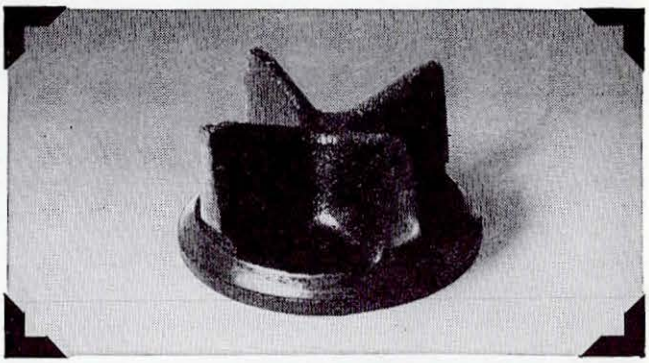
TEST DATA

UNITS	Westinghouse Locomotive air Compressor 8½" Cross Compound
LUBRICANT	Calol Air Pump Lubricant
TEST PERIOD	1 year
LUBRICATORS	Westinghouse F-1-A
ENGINE	M-137-151 — 2-8-8-2
CONDITION	Main Line Operation - 1% grade
LOCATION	Oroville, Calif. - Portola, Calif.
FIRM	Western Pacific R.R. Co.

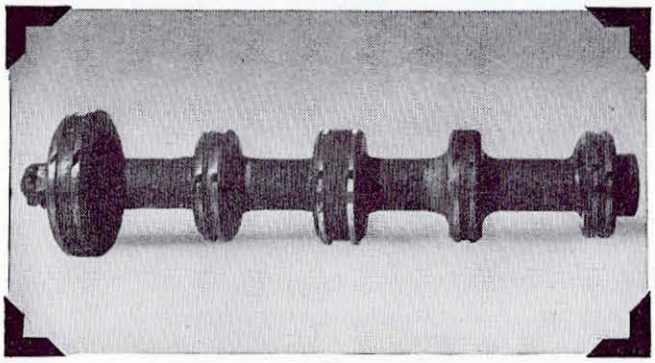
TEST SHOWS NEW OIL SUCCESSFULLY LUBRICATES BOTH STEAM AND AIR ENDS OF AIR COMPRESSOR



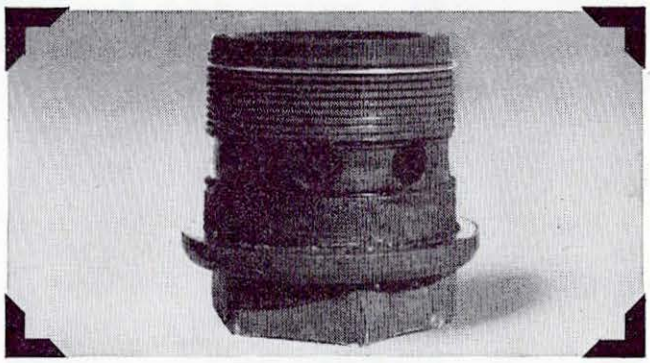
Calol Air Pump Lubricant was used for a full year in a compressor like this, on a locomotive in regular service. It was supplied to both ends by removing the plug between the lubricator's two reservoirs.



This Air Discharge Valve was in the compressor during the test. As the photograph shows, at the end of a year's operation, it was free of carbonaceous deposits. Calol Air Pump Lubricant resists oxidation.



No lacquer or gum appeared on the Steam Differential Valve and wear was negligible. Valve rings and steam piston rings stayed clean and unstuck. Calol Air Pump Lubricant resists highest temperatures.



The Air Discharge Valve Cage was clear of excessive oxidation deposits, as were air pistons and their lands and rings. The use of Calol Air Pump Lubricant eliminates the necessity for frequent cleanup jobs.

REMARKS: Another compressor of the same size and type was operated on the opposite side of the locomotive. During the test, it was lubricated with a conventional type of Grade A valve oil. This compressor's valves and valve cages became filled with an appreciable amount of carbon. Also, considerable deposits of carbon and lacquer accumulated in air discharge passages.

Calol Air Pump Lubricant eliminates these conditions because it is a doubly-compounded oil. It is highly stable both in use and in storage. Its special compounds help resist oxidation by air, heat and moisture. They keep pistons, rings, ring-land areas, air passages, valves and other parts clean, and maintain a tough lubricant film on hot and cool spots alike in the most severe operation.

Trademark "Calol," Reg. U. S. Pat. Off.

STANDARD OF CALIFORNIA • San Francisco, Calif.
THE CALIFORNIA COMPANY • Denver, Colo.
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA OIL COMPANY • New York

there's a BETTER SIMPLER way today of spotting bearing trouble!

When passenger trains rely on intermittent, "one-sided," inspection by wayside stations and the crews of passing trains to spot bearing trouble —the warning often comes too late! Permanent damage is done before the trouble is detected.

The Westinghouse-Union Hot Bearing Detector provides a better, safer, *modern* way. At the first hint of abnormal temperature rise in any bearing, a red light in the affected car signals the train crew . . . and a signal whistle in the cab warns the enginemen.

Temperature fluctuations due to weather or normal operating conditions are disregarded. Only the excessive rise in an individual bearing is reported.

Principles and details of operation are digested in leaflet No. 2464. May we send you a copy?

Westinghouse Air Brake Co.

WILMERDING, PA.

Brakes are Basic to Railroad Progress

Vol. 124, No. 23 June 5, 1948

RAILWAY AGE

With which are incorporated the Railway Review, the Railway Gazette, and the Railway-Age Gazette. Name Registered in U. S. Patent Office.

IN THIS ISSUE

EDITORIALS:

G. O. P. Congress More Spendthrift Than the New Deal 45
Something Wrong Somewhere 46
Dishing It Out Was Much More Pleasant 47
Too Much Guesswork in Railway Engineering 47

COMMUNICATION 73

GENERAL NEWS 74

OPERATING REVENUES AND EXPENSES 98

CURRENT PUBLICATIONS 99

GENERAL ARTICLES

New Haven Passengers Get What They Asked For—$20,000,000 Worth 48
What's Ahead in Employee Relations, by Dr. Claude Robinson 54
Reduced Fares Bring New Business 57
British Railways Using Concrete Ties, by R. L. M'Ilmoyle 60
Standards of Rate Reasonableness in Canada, by G. Lloyd Wilson 63
C. T. C. Slashes C. & E. I. Running Time 66
First Quarter Purchases Rise to $750,000,000 69
Steelman Again Fails to Settle Op Dispute 71

Published each Saturday by the Simmons-Boardman Publishing Corporation, Orange, Conn., with Editorial and Executive Offices at 30 Church Street, New York 7, N. Y., and 105 W. Adams Street, Chicago 3, Ill.

Washington 4, D. C.: 1081 National Press Building—Cleveland 13: Terminal Tower—Seattle 1: 1033 Henry Building—San Francisco 4: 300 Montgomery Street, Rooms 805-806—Los Angeles 14: 530 West 6th Street—Dallas 4: 2909 Maple Avenue.

Samuel O. Dunn, Chairman and President. James G. Lyne, Executive Vice-President. Roy V. Wright, Vice-President and Secretary. C. Miles Burpee, F. C. Koch, R. E. Thayer, H. E. McCandless, S. Wayne Hickey, H. H. Melville, C. W. Merriken, Vice-Presidents. J. T. DeMott, Treasurer. Ralph E. Westerman, Arthur J. McGinnis, Assistant Treasurers.

C. Miles Burpee, Business Manager.

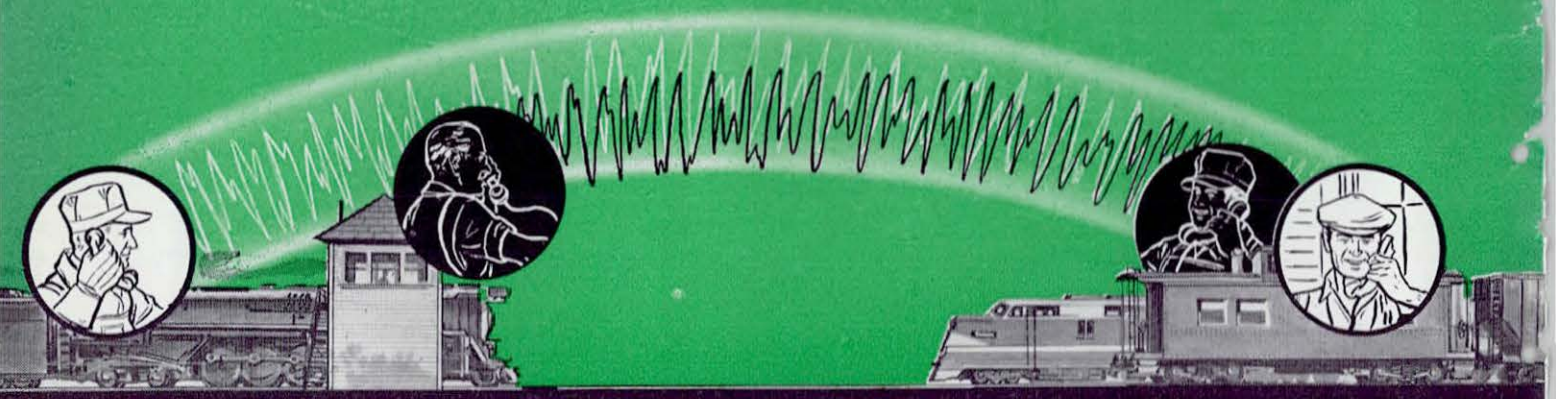
Subscriptions including 52 regular weekly issues, and special daily editions published from time to time in New York or in places other than New York, payable in advance and postage free. United States, U. S. possessions and Canada: 1 year, $6.00; 2 years, $10.00; other countries not including daily editions: in Western Hemisphere 1 year $10.00; 2 years $16.00; other countries 1 year $15.00; 2 years $25.00. Single copies, 50 cents each, except special issues.

H. E. McCandless, Circulation Manager, 30 Church Street, New York 7.

Railway Age is a member of Associated Business Papers (A. B. P.) and Audit Bureau of Circulation (A. B. C.) and is indexed by the Industrial Arts Index and by the Engineering Index Service.

PRINTED IN U.S.A.

Not just **TWO-WAY**
but also **TWO-CHANNEL**



TRAIN COMMUNICATION

To the many advantages of two-way voice communication between your enginemen, conductors, and wayside station operators, "Union" Inductive Train Communication adds the two-channel feature.

With two-channel I.T.C., either of two entirely separate voice channels is instantly available to the user by merely flipping a selector lever. One channel may be used for regular communications and the other reserved for emergency service—to break into conversation on the regular channel at any time. Or, you may assign each of the channels to specific services. In areas where communications traffic is heavy, it can double the capacity of your railroad's communication system.

Our representatives will gladly give you full information on this two-channel (two-frequency) communication system. Write or call the nearest "Union" district sales office.

"UNION" I. T. C.

THE VOICE OF EXPERIENCE IN TRAIN COMMUNICATION

UNION SWITCH & SIGNAL COMPANY

SWISSVALE PENNSYLVANIA

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

WEEK AT A GLANCE

PROGRESS ZERO: Another week had passed, as this issue went to press, without visible progress in settling the wage-rules dispute between the hold-out op unions and the White House, and trial balloons reportedly had been sent up by the three out-of-step leaders to see what the reaction would be to an appeal to Congress to bail them out of their painful predicament. Meanwhile, as our report on current developments indicates (page 71), the brothers' lawyers are busy filing with Judge Goldsborough the reasons why they don't think a law that subjects labor leaders to any restraints is a good law. As we observe editorially, the union bosses' trouble is one of adjustment—it's not so pleasant for them to conform to the law as it is to lay down the law for others to conform to.

ON GETTING ALONG TOGETHER: Employers and employees will get along better together, suggests Dr. Claude Robinson of Opinion Research Corporation (page 54 herein), as management adopts more generally a technique in industrial relations grounded on these principles: Job satisfaction depends on many factors besides what's in the pay envelope; harmony depends on free two-way communication of ideas and establishment of understandings; and adjustments will fall into the general pattern laid down in the Taft-Hartley Law.

CHICKENS COME HOME: The Republican majority in Congress cannot escape responsibility for saddling the taxpayers with the cost of the biggest pork-barrel raid in all history—the $700 million appropriation for inland waterways to cut a few favored shippers' freight bills. But legislation of this kind isn't passed unless somebody seeks it—unless the heat is turned on by groups that appear to congressmen to be important enough to listen to. These groups include business men who put their immediate self-interest ahead of the general welfare, and these business men cannot escape their share of the responsibility for such profligate expenditures to subsidize competitors of going private business enterprises. Our leading editorial suggests that the business organizations supporting—or at least tolerating—"federal aid" of this nature will find themselves sooner or later in the same doghouse that some of our best-publicized union leaders now occupy.

SUCCESS WITH STREAMLINERS: Particularly valuable evidence of the inherent money-making capacity of postwar passenger equipment tailored to its territory has been turned in by the Central of Georgia. One new train has replaced four prewar steam trains on one run, showing a substantial and profitable improvement in revenues. On another run the new train has been added to the services previously scheduled, and the revenues from the total operation show a definite increase, though the older steam trains lost some business to the streamliner. These profitable results are not entirely attributable to the new equipment and faster schedules, however, as "bargain" fares and skillful promotion have helped increase the volume of travel. How this has been done is reported in one of our illustrated articles (page 57).

LUXURY FOR COACH TRAVEL: When the New Haven undertook to give its customers the benefit of the latest refinements of the art of passenger car construction it was obligating itself for a large expenditure. What the railroad—and travelers who use it—are getting for that $20 million outlay is indicated by the illustrated article on page 48, in which are described the 103 new Pullman-Standard-built coaches (already in service) included in the 207-car order. Improved truck design, fluorescent lighting, tight-lock couplers, a public-address system, pneumatic door openers, and extra insulation are among the features that add up to new highs in coach comfort and convenience.

$¾ BILLION IN THREE MONTHS: The railroads' expenditures for materials and supplies plus orders for new equipment in 1947 set an all-time high record, yet such outlays in 1948's first quarter exceeded the same period last year by 18 per cent. The data appear on page 69 this week.

CONCRETE CROSSTIES: In 1941, faced with a war-induced shortage of timber, which has continued into peacetime, the British railways adopted specifications for the manufacture of concrete ties with prestressed wire reinforcing. Now being turned out on a mass-production basis which has slashed original manufacturing costs 88 per cent, the ties cost about $7.70 each, and are giving satisfying results in service tests. An illustrated feature on page 60 outlines the manufacturing processes.

CASHING IN ON C.T.C.: The single-track southern end of the C.& E.I. Chicago-Evansville line handles on the average 40-odd trains a day, and most of them are bunched in relatively short periods. To keep these trains moving on fast schedules some high-class railroading is required. The flexibility and reliability of centralized traffic control fit particularly well into a tight situation like this, and the installation of such equipment has brought about savings in freight-train time averaging 1 hr. 40 min. on the 122-mi. run. Examples of its effectiveness are given in the illustrated description on page 66.

CANADIAN FREIGHT RATES: Despite the close similarities between Canadian and United States railroads the lines north of the border operate with a rate and tariff structure that has several distinctive characteristics. G. Lloyd Wilson calls attention to some of them in one of our articles this week. Though a general rate increase was allowed recently, over vigorous protests from some sections, revenue per ton-mile in Canada, according to this authority, is still 20 per cent less than on this side of the border, a result, in part, of unlike standards of "reasonableness."

ONLY COMPLETELY-PROTECTED CONDUCTORS ASSURE *Longest-Lived* WIRES AND CABLES

. . . and only Okolite-Okoprene cables possess these 9 "factors of protection"

With today's installation costs* only the *Longest-Lived* will be economical

*The lifetime cost of a cable rather than its first cost is the only true measure. Okonite wires and cables, built to stand up better and longer, can offset high installation costs.

❶ Conductors are coated with corrosion-resistant Okoloy, a lead alloy that outlasts tinning 2 to 1.

❷ Internal corona cutting is eliminated and dielectric strength increased by Semicon Tape applied over the conductor on all Okolite-Okoprene cables operating at over 2000 volts.

❸ Moisture-resisting, high-voltage Okolite, an oil-base insulation proved in over 20 years of service, is made with Up-River Fine Para, the best grade of natural rubber. Approved as Type RWSN by Underwriters' Laboratories.

❹ The Okoprene covering, a pioneering development of the Okonite laboratories, has established its stability and permanence on millions of feet of cable installed since 1935 under the most severe conditions.

❺ Both insulation and jacket are applied together in a single operation by the strip-process and uniformly vulcanized in a continuous metal mold to give the best and most dependable bond.

❻ Insulation and covering receive but a single vulcanizing "cure" thus eliminating the life-shortening effects of double vulcanization.

❼ Thickness of both insulation and jacket are accurately controlled by the Okonite strip-insulating process.

❽ In addition to a. c. tests, every Okolite-Okoprene cable is subjected to high-voltage d. c. tests more severe than used by any other cable manufacturer.

❾ Okolite-Okoprene cables have the longest and most extensive service record.

Okolite-Okoprene's electrical operating advantages, installation advantages and design advantages are given along with dimensional data in illustrated, information-crammed BulletinRA-1037. For a copy, please address The Okonite Company, Passaic, New Jersey.

6627

OKONITE SINCE 1878 **insulated wires and cables**

THE BEST CABLE IS YOUR BEST POLICY

RAILWAY AGE

EDITORS . . .
Samuel O. Dunn and James G. Lyne
MANAGING EDITOR . . .
Roy V. Wright
ASSISTANT MANAGING EDITOR . . .
C. B. Tavenner
WESTERN EDITOR . . .
Neal D. Howard
WASHINGTON OFFICE . . .
Walter J. Taft
Sherman Davis
TRANSPORTATION DEPARTMENT . . .
William H. Schmidt, Jr.
Robert G. Lewis
MECHANICAL DEPARTMENT . . .
C. B. Peck
E. L. Woodward
H. C. Wilcox
C. L. Combes
G. J. Weihofen
ENGINEERING DEPARTMENT . . .
M. H. Dick
Walter L. Turner, Jr.
Henry E. Michael
Norris V. Engman
PURCHASES & STORES DEPARTMENT . . .
John W. Milliken
EQUIPMENT & FINANCIAL NEWS . . .
Fred C. Miles
SIGNALING AND COMMUNICATIONS DEPARTMENT . . .
John H. Dunn
Maurice Peacock
ELECTRICAL DEPARTMENT . . .
Alfred G. Oehler
WESTERN NEWS DEPARTMENT . . .
George R. Johnson
ASSOCIATE EDITOR . . .
Charles Layng
LIBRARIAN . . .
Edith C. Stone
EDITORIAL ASSISTANT . . .
Elaine C. Farrar

G. O. P. CONGRESS MORE SPENDTHRIFT THAN THE NEW DEAL

Both houses of Congress have approved parallel appropriation measures calling for the expenditure during the next fiscal year of some $700 million for inland waterway improvements—thereby blasting any hopes that the return of the Republicans to power would strengthen the cause of private enterprise, as opposed to socialism, in the transportation industry. This $700 million appropriation is the *largest pork-barrel raid in all history*. It simply shows that, while the New Deal rascals have been turned out, the only practical effect has been to replace them by another crowd which is even more profligate of the people's money and even more socialistic—not by honest admission, but in actual practice.

Public funds in the billions are being poured into government-owned transportation plant — canals, superhighways, airports—which is being placed into competition with the self-supporting railroads. The direct beneficiaries of this huge capital investment are not paying a nickel in increased tolls or other charges for the superlative new facilities which are being provided for their use. Such financing of economic services—by taxation, rather than by payments from direct beneficiaries—is of course, the very essence of socialism.

Congressman H. H. Buffett of Nebraska recently made a speech favoring a return to a gold-coin monetary standard* in which he showed how self-seeking pressure groups exert influence out of all proportion to their numerical strength. In June, 1947, Mr. Buffett went on to say, the House approved without a single dissenting vote an increase of $27½ million in pensions to Spanish-American war veterans. Why? Because 97 per cent of the electorate with no personal stake in this legislation would not even notice a congressman's position on it, while practically all of the veterans of '98 would be swayed for or against him solely by his vote on this one proposal. By quietly going along with a dozen or so such dips as this into the public treasury, the legislator invites no criticism whatever and he picks up a few thousand sure votes. This is the way the waterway pork-barrel bill won out, and the primary blame rests, not on the congressmen who voted for it against their better judgment, but on their selfish and foolish constituents who urge or countenance such stultifying behavior.

The general public good-will which exists toward the railroads is not of much real value to them when legislation such as this river bill can be so readily enacted. Public approval is as necessary to the railroads as a water supply is to fire-

*See "Should We Return to a Gold Standard?" — a pamphlet reporting a symposium on this subject, published by the National Industrial Conference Board, 247 Park ave., New York 17. Price 50 cents.

fighting—but a reservoir of good-will is insufficient of itself to get effective results. There must be a mechanism to play a stream of enthusiasm on the spot where the trouble is going on. It is no detraction from the importance of the general public esteem the railroads have acquired— nor of the able people who have directed the strategy which has won it—to note that what the railroads need now is, not so much an enlargement of their supply of friendly public feeling, but a more effective method for turning existing affection into votes.

The situation would be most discouraging, except for what appears to be an increasing public awareness of the hypocrisy of business leaders in organizations who talk "free enterprise" and decry "governmental extravagance" and then turn the heat on their congressmen for unprecedented appropriations for the particular projects which they believe will help *them*. In a recent broadcast, Fulton Lewis, Jr., the radio news commentator, revealed the facts about this disgraceful inland waterways appropriation measure, then pending in the Senate. He made it perfectly clear to his listening audience that it was not New Dealers or Socialists who were forcing this measure through Congress, but the local chambers of commerce and other so-called "civic" organizations, who are out after all the booty from the public treasury they can get.

In the current issue of the Harvard Business Review there appears an article on the National Association of Manufacturers in which a list of the legislation favored and opposed by that organization is given and the following categorical statement is made:

> Without exception the measures favored by the N. A. M. provided some sort of aid to business and industry. Without exception, rigid opposition was maintained against similar assistance to other groups. . . . A major weakness of narrow self-interest is that, no matter how well it is rationalized and disguised, it will sooner or later be revealed for what it really is.

Neither the Republican party nor organizations of business and industry can afford, much longer, to continue the kind of behavior which arouses and justifies such criticism as this—and which comes, not from the enemies of business, but from its very best friends. The manufacturers of railroad equipment and supplies either are members of these commercial organizations, or are eligible for membership in them, and it is doubtless within their power to influence these organizations to take a position less unfriendly to private enterprise in transportation than they have in the past.

When leaders of business show—not by their pretensions but by their actual behavior—that they are governed by no principle more exalted than that of immediate self-interest, then they do not merit any more respect from the citizenship as a whole than that accorded to self-seeking union leaders. As the historian Toynbee has observed, an "élite" minority will retain its favored position only so long as the preponderant majority is convinced that the "élite" is working for the common welfare. The kind of business and political leadership which has tolerated or actively supported this pork-barrel waterway measure, and recent colossal appropriations for "federal aid" to highways, uncompensated by increased tolls or fees, does not deserve the confidence of the American people nor can it expect to retain it.

SOMETHING WRONG SOMEWHERE

It appears as if a short-sighted policy over a period of years regarding the rehabilitation of shops and shop equipment may be beginning to catch up with the railroads. For a long time industrial America has offered the railroad industry an example of the value of using modern equipment to do two things of major importance in any business which depends upon mechanical facilities for its existence, viz., to increase production to meet accelerated demand while keeping the cost of that greater production within reasonable limits.

If there is any industry that should realize the fundamental truth that the older a piece of machinery gets the more it costs for every hour or day of service that it renders, that industry is the railroads —for it has before it the example of the increasing expense of steam locomotive repairs directly related to increase in age or miles. Also, much of the early enthusiasm about the low cost of Diesel maintenance is being dissipated in mounting costs as the age of existing Diesel-electric locomotives increases. Why then does an industry which now spends over *half a billion dollars* every year for repairs to steam locomotives think that it can go on maintaining equipment in shops that, by comparison with any other machinery-using industry, are definitely obsolete?

For some reason, railroad management, either that of the mechanical department or higher up, has been reluctant to utilize the knowledge of modern shop engineering. Any railroad with a good shop engineer can provide hundreds of examples as to how money can be spent that will insure large returns on the investment. One simple instance is afforded by a railroad that turned down a mechanical department request to spend $90 thousand for equipment that would pay for itself in *three months*. What is the answer—the unwillingness of management to see the economic potentialities of modern equipment or the inability of a mechancial department to sell the idea to management in competition for the available dollars the railroad has to spend?

The statistics with respect to the maintenance of motive power and mechanical equipment prove conclusively two things: that the opportunities for savings are numerous and that the money which might be used to effect these savings is now being used to maintain a tremendous inventory of obsolete equipment in service.

DISHING IT OUT WAS MUCH MORE PLEASANT

A few days ago the chiefs of the dissident railway unions, piqued at the persistent refusal of railway managements to concede them additional "featherbed" rules, came out in favor of socializing the railroads.

People too long accustomed to enjoying the prompt gratification of their whims lose the habit of behaving logically. It is only very unusual persons who can act rationally when dropped into a totally unfamiliar environment. It is no affront to the union leaders to observe that they are human, and cannot be expected to behave otherwise.

Professor J. A. Schumpeter, one of the most penetrating students of the comparative methods of capitalism and socialism, has observed that "whatever else the socialist management may bungle, it certainly will not pay any premium to anybody for the express purpose of inducing him *not* to produce." Inviting government ownership of the railroads is, thus, no alternative route to the additional "featherbed" rules the dissident union leaders demand. Instead it is the very course of action most certain to deny to them all further hope of increased "featherbedding" and, indeed, of retaining such "mock-work" privileges as they now enjoy. If the railway unions want stricter discipline than that to which they are now subjected, then their leaders are moving them rapidly toward that goal.

Not having their own way indefinitely is what is causing the severe heart-burn of the union leaders, but the remedy they are asking for—maybe not seriously but only as a bogey-man to send chills down the spines of the timid—promises to be much more uncomfortable, for them, than the slightly battered egoes from which they are now suffering. Other people besides these union leaders—e.g., industrial management—have made the temporarily painful discovery that America lets *any* group go only just so far in trying to tell everybody else where to head in—and then pulls the pin on such ambitions.

One cannot enjoy the privilege of living in a republic where all authority is subject to limitation without himself submitting to having his own wings clipped when they try to spread out over too much territory.

TOO MUCH GUESSWORK IN RAILWAY ENGINEERING

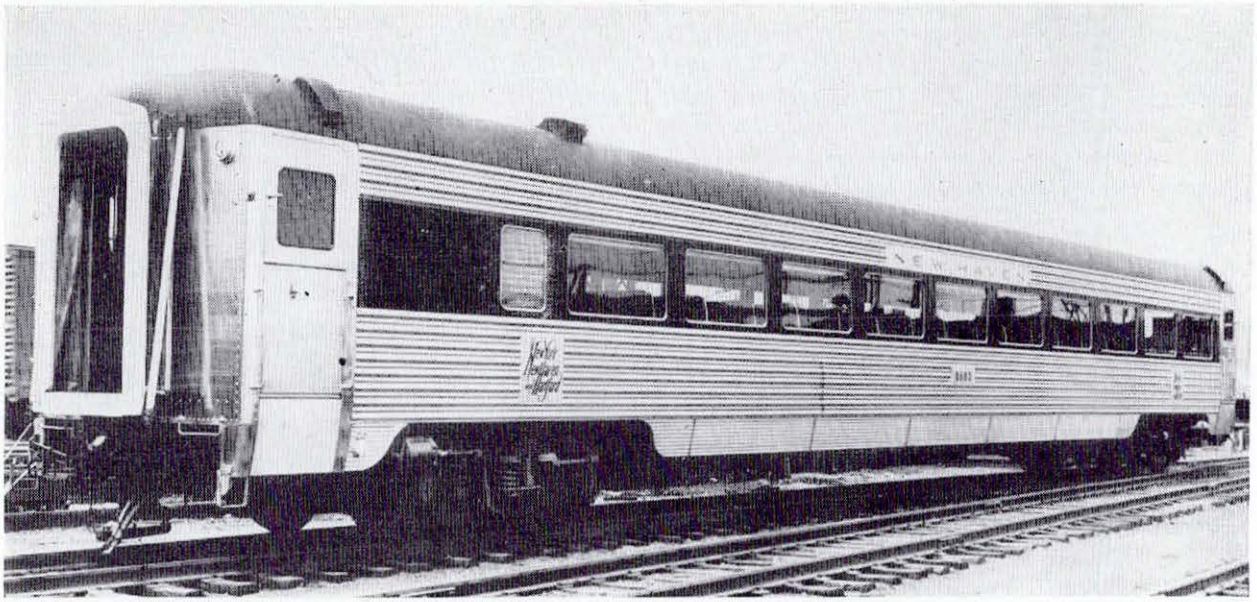
There are too many examples indicating that some engineers, in violation of the basic principles of their craft, are taking unnecessarily long chances in design, construction and maintenance practices through lack of adequate preliminary investigations. The calculated reason for such neglect is frequently to accelerate construction or to save expenses.

Fortunately, the element of safety seldom enters into these matters. Most engineers are ultra-conservative where safety is involved, but some of them are willing to take a chance with other unknown factors especially where subsoil and foundation conditions are concerned; and the results have sometimes been almost disastrous, economically.

Recently, two high railway fills on new line relocation slid out during construction, displacing hundreds of thousands of yards of material. In one case, the nearby existing main line was seriously threatened. In the other, a new bridge abutment and an adjacent pier were pushed out of line and had to be completely rebuilt. Underlying sloping seams of wet clay were the cause. Adequate preliminary subsoil investigation would have warned of the difficulties and they could have been overcome—but, to avoid "unnecessary" expense, preliminary investigation had been omitted.

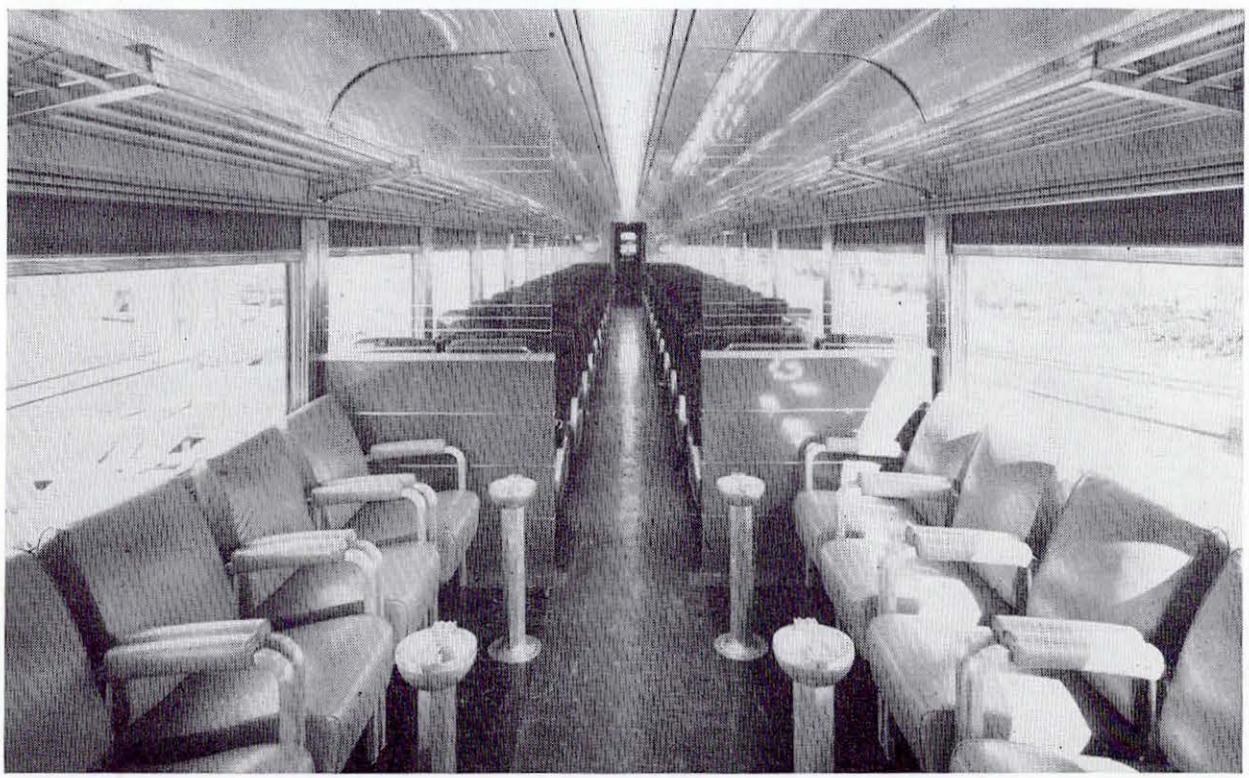
Today, large sums are being spent annually for various forms of roadbed stabilization, such as grouting, pole driving and installations of subsurface drains. In this connection, the question may well be asked to what extent these large expenditures are based on the results of adequate scientific subsurface investigations to determine the measures best suited to particular conditions, and to serve as a guide in assuring that the most effective and economical installations are being made. Some roads make such preliminary investigations, just as they investigate thoroughly all subsoil and foundation conditions. Others do not, and blindly apply corrective measures, often at the risk of disappointing results, if not outright failure.

Portable power drills and augers are available for practically every type of subsoil investigation. Through the use of this equipment scientific studies can be made under practically any conditions, substituting real engineering methods for guesswork.



New Haven Passengers Get What They Asked For—$20,000,000 Worth

Nine types of cars, 207 units in all, of which 103 coaches have been delivered, are of basic structural design developed as result of five years of research



All coaches have smoking sections at one end separated by glass partitions

The New York, New Haven & Hartford five years ago began the research and development work that has culminated in the design of nine different types of passenger cars representative of the postwar era. This program involves a total of 207 cars and an expenditure of approximately 20 million dollars. A substantial part of the program of adding these new cars to the fleet of lightweight, streamline equipment has been completed by the delivery of 103 coaches from the Worcester, Mass., plant of the Pullman-Standard Car Manufacturing Company. The orders include sleeping, dining and parlor cars. Delivery of the parlor cars has commenced.

The details of these new cars were worked out in the construction of a wooden demonstrator car which included all the design features developed through the years 1943 to 1946. Minor improvements were made in the interior arrangement of this experimental car at the company shops at Readville, Mass., which resulted in the specifications for the nine car types, all of which have one fundamental design of car body construction, the interior floor plans being varied to suit the requirements of the passenger traffic department. The basic design of body construction involves the use of low-alloy high-strength steel welded throughout to form a single structural unit.

Description of the Coaches

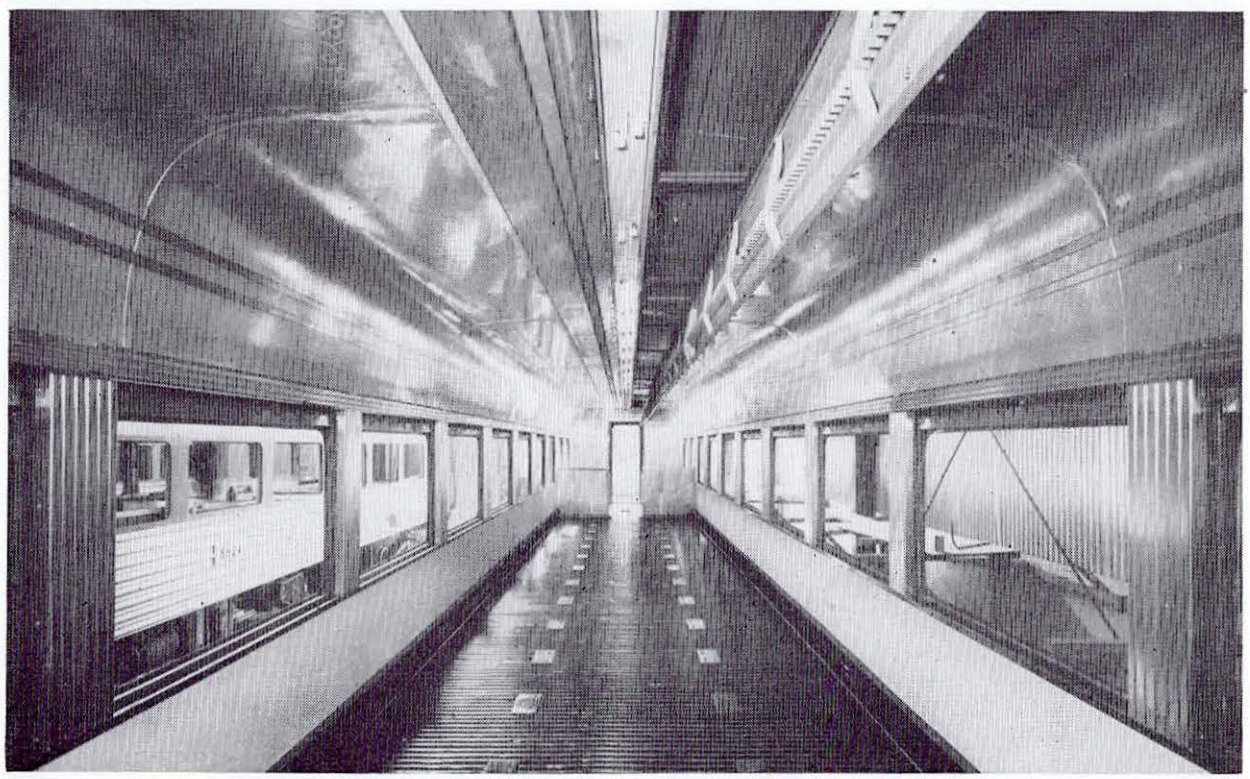
The car body design exceeds in strength the Association of American Railroads requirements for high-speed service and will permit joint operation with the Pennsylvania between Boston, Mass., and Washington, D. C. The roofs are reinforced with girder type construction to resist collapse in event of derailment and the strength of the end frame has been increased to provide additional anti-telescoping resistance.

The new cars are equipped with an entirely new truck design which has resulted in improved riding qualities. This truck, equipped with high-speed brakes, was tried out on existing coach and dining car equipment for 15 months of continuous experimental service before being built into the new coaches. Other design features are additional insulation, two-aspect electric marker lamps, public-address system, panoramic breather-type side windows, fluorescent lighting, air conditioning, mechanical water cooler, pneumatic door openers and closers, and tight-lock couplers.

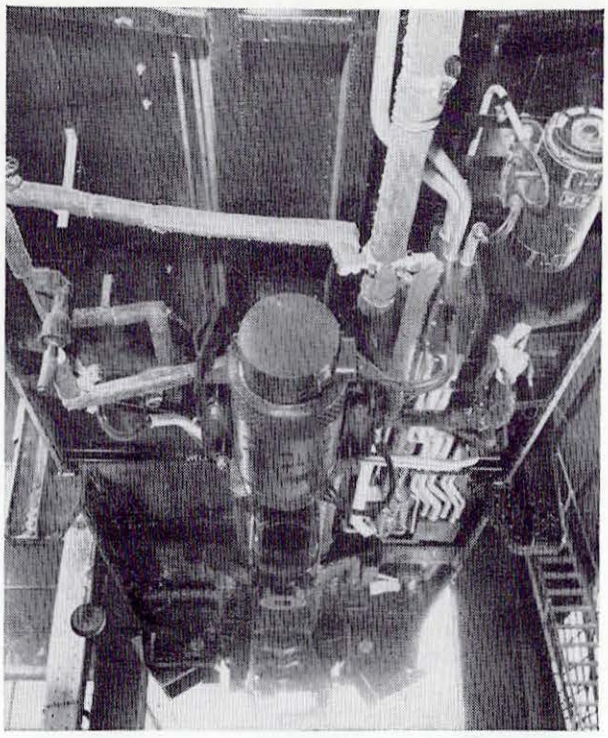
The overall length of the new coaches is 85 ft. 9 in. over buffers uncoupled, with an extreme width of 10 ft. 1 in. over the stainless-steel side sheathing and a maximum height of 13 ft. 4 in. The coaches will negotiate a 250-ft. radius curve and weigh approximately 125,000 lb. General dimensions are shown in an accompanying table.

Body Construction

The car body is designed to withstand a compression load of 900,000 lb. at line of draft with a maximum of 0.8-in. deflection measured at the center of the car. The underframe is of welded high-strength low-alloy steel having center sills consisting of two A.A.R. Z-26 sections weighing 31.3 lb. per ft. with top flanges continuously welded. The draft sills are of welded construction. The side sills, 12-1/16-in. deep, are of 0.135-



Construction view of coach interior showing lighting and air conditioning ducts with hinged panel lowered on one side



Left—The "broadcasting" station of the public address system. Right—Underside of car showing electrical, air conditioning and brake equipment

General Dimensions and Weight of New Haven Streamline Coaches

Length over platforms (buffers), ft. in.	85- 3
Truck centers, ft. in.	59- 6
Width over side posts, ft. in.	9-11- 1/8
Width between side posts, ft. in.	9- 5- 1/8
Height, rail to top of carlines, ft. in.	13- 4
Height, rail to top of platform plate, ft. in.	4- 2-11/16
Height, rail to center of coupler, ft. in.	2-10- 1/2
Width of vestibule platform, ft. in.	4- 8
Seating capacity	78
Light weight of car, lb.	125,000

in. thick Yoder-section L shape, with outside side sills of 2-1/2-in. by 1-1/2-in. by 1/8-in. angle. Cross members are welded to these sills. The bolsters are weldments of the single-web type. The cross bearers, spaced approximately 8 ft. 6 in., are pressed sections. The floor cross beams are 3-in. Z bars. Jacking pads are welded to the underframe at the four corners of the car.

The floor stringers are low-alloy steel to which poplar furrings are attached. The floor is 3 S ½ H arched aluminum laid crosswise and screwed to the underframe. Above this is Tucolith composition laid 13/16 in. thick. Over the composition flooring is a cork slab subfloor 5/16 in. thick, while the surface is 3/16-in. rubber tile, silver gray in the aisles and black-white elsewhere.

The side frames are jig-welded of girder-type construction with 2-1/2 in. by 1-1/2-in. by 1/8-in. outside sill angles and Z-bar belt rails and window headers. The side sheets, spot welded to the frame, are .075 in. thick with stainless fluted molding above and below windows. A fluted stainless-steel skirt in sections is used below the side sills.

The roof is turtle-back construction of high tensile low-alloy steel, continuous between end hoods. The sides, roof, floor and ends of the cars are insulated.

The car interiors are finished below the windows with 3/16-in. tempered Presdwood with pier panels of anodized aluminum. Bulkheads are covered with a sheet of anodized aluminum above wainscot line. The headlining, ceiling and ends are aluminum sheet .060 in. thick. The heater grills are copper-bearing steel. Window cappings are black Micarta.

All coaches have a smoking section. The main section, seating 64 passengers, is separated from the 14-passenger smoking section by a ¾-in. glass partition with glass windbreakers at the end doors of the smoking section.

The large side windows provide visibility for passengers in two seats and are glazed with ¼-in. Solex plate glass outside and ¼-in. safety plate inside. The glazed sealed units are set in extruded rubber.

All interior hardware is satin-finish chrome plate. Luggage racks have cast aluminum supports with extruded square aluminum rods.

Seats and Interior Finish

There are 28 rotating and reclining seats and four bulkhead seats in the main passenger section, all fitted with Airfoam cushions and soft spring and padded backs upholstered in blue mohair fabric with Bakelite arm caps. The smoking-section chairs are upholstered in tan pigskin. The window curtains are Pantasote Hunter green. Bone-gray enamel is used on headlining and side walls. Slate-gray enamel is used for the finish from window sills to floor. The curtain box molding is striped in red and the inside of the end door at

the saloon end of the car is finished in red and the opposite door is finished in blue enamel. The hallway is finished in aluminum enamel.

The cars are heated by overhead heat in connection with the air conditioning system and also at the floor level. Fin-type tubes with loop equipment is used at the floor level and thermostatic regulation for both systems is installed.

Trucks and Brake Equipment

All of the new passenger cars are equipped with an entirely new passenger-car truck, developed through the combined efforts of the railroad's engineering staff and the General Steel Castings Corporation. This truck is known as the outside-swing-hanger type and departs from the conventional truck design in that the car body weight is supported directly on coil springs suspended from the *outside* of the truck frame rather than from the *inside* of the truck frame as in conventional type trucks.

This arrangement of spring suspension provides a greater lateral stability of the car body in operating at high speeds around curves than results with conventional design trucks. As an experiment, the New Haven equipped one of its early streamline coaches in 1945 with a truck of this design. The car was placed in service in September of that year, and has been in continuous use since. The riding qualities of this truck were such an improvement over the conventional type that after a period of approximately 15 months of experimental continuous service, it was decided to utilize it on all the new equipment.

The trucks are equipped with American Steel Foundries' Simplex unit-cylinder clasp brakes which are designed to produce 250 per cent braking ratio with 100 lb. per sq. in. brake-cylinder pressure. Two 12-in. by 10-in. brake cylinders are used in conjunction with the clasp brake and A.S.F. manual slack adjusters are incorporated in the designs. Fafnir grease-lubricated roller bearings are used on all axles.

The brake schedule is Westinghouse D-22-P with D-22 AR control valves.

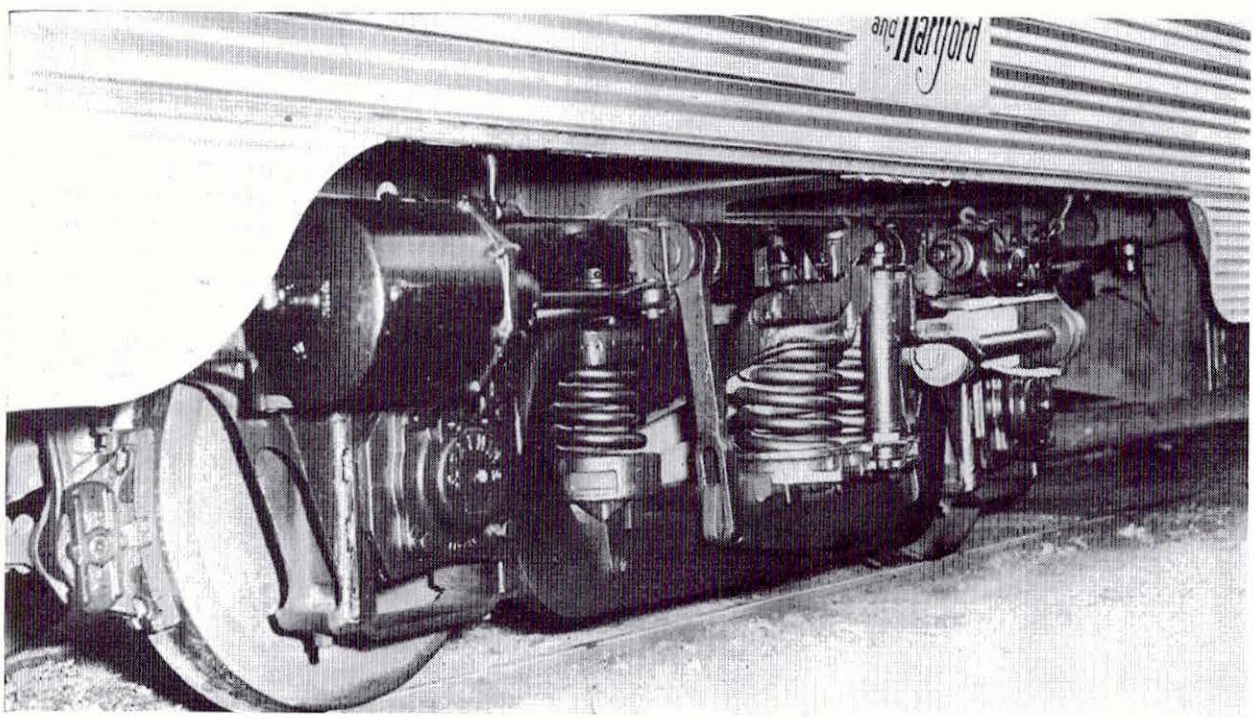
Electric Power Supply

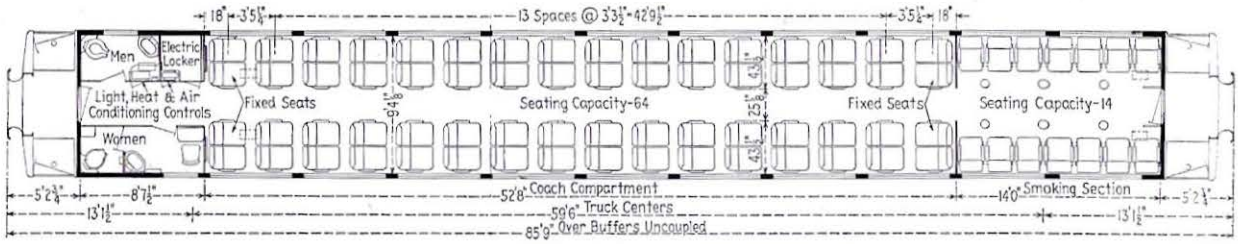
Electric power for air conditioning, lighting and auxiliary services is supplied by a body-mounted motor-generator, driven from a car axle by a gear and clutch drive. The set consists of a 25-30-kw., 76-volt d.c. generator, directly connected to a 25-hp., 220-volt, 3-phase, 60-cycle a.c. motor. The motor is used to drive the generator when the car is connected to standby power. There are two 60-amp. 4-pole receptacles for receiving standby power and two 150-amp. battery-charging receptacles on each car.

Connected Electrical Load

		Watts
Regulated d.c. circuits		
15	15-watt emergency lights	225
4	40-watt vestibule lights	160
2	30-watt marker lights	60
1	evaporator blower motor	1,030
4	ventilating fans	200
Unregulated d.c. circuits		
2	25-watt locker lights	50
2	door operators	35
1	condenser fan motor	800
1	motor alternator	2,040
	Total	14,200

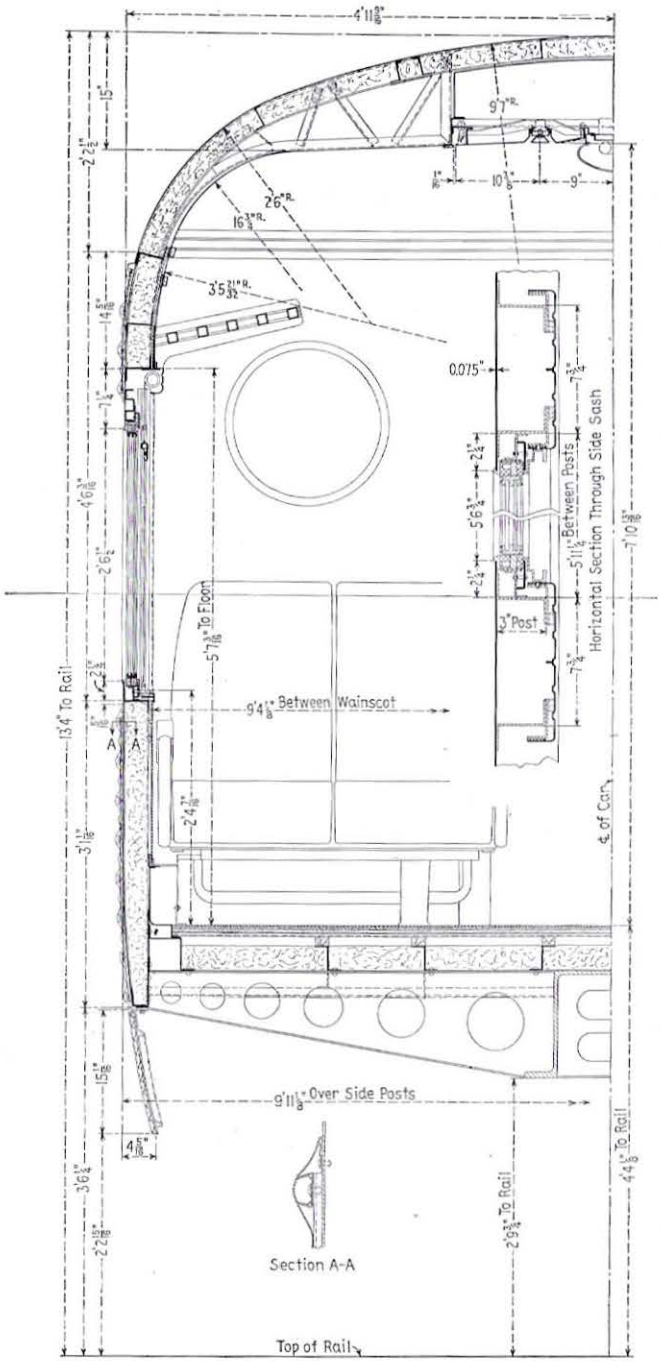
The trucks have outside spring suspension, hydraulic shock absorbers and high-speed brake equipment





Floor plan of the 103 New Haven coaches

Typical cross section



The battery is a 64-volt, 32-cell, lead-acid type, rated 600 amp.-hr. at the 8-hour discharge rate. Each battery is made up of ten 3-cell trays and two 1-cell trays. A 1.2-kw. motor-alternator receives power from the 64-volt d.c. power source and delivers 110-volt a.c. power for fluorescent lighting, water cooler, and public-address system.

The electric locker includes the generator control panel, generator regulating relay panel, lamp regulator, a.c. line contactor, a.c. line relay amplifier for the public-address system, compressor starting panel, automatic reset relay, and floor-heat control panel. All wires and cables are flexible and have rubber insulation with weatherproof braid. Conduits throughout are aluminum. Under the car, they are of iron-pipe size, and elsewhere they are electric tubing (thinwall) with aluminum fittings throughout.

General illumination in the body of the coaches is supplied by trough-type fluorescent fixtures, making a continuous line of light along the center line of the car ceiling. The lamps used are 48-in., T-12, 40-watt, 120-volt a.c., 3,500 deg. white, hot-cathode fluorescent lamps arranged for instant starting. Illumination on the reading plane ranges from 15 to 20 footcandles.

There are also nine emergency lights within the main fixtures. These are 15-watt, 40-60-volt, T-6 incandescent lamps. The fluorescent lamps are supplied by the motor-alternator and the incandescent lamps directly from the regulated d.c. power source. Forty-watt, 60-volt incandescent lamps are used in the vestibules and 25-watt, 60-volt lamps in the electric and air-conditioning control lockers.

Permanent built-in two-aspect electric marker lights are installed in all four corners of the car. These are fitted with 30-watt 64-volt double-contact-base incandescent lamps.

The coaches are all equipped with electro-mechanical air conditioning having a capacity of 8 tons. The air in the car is kept clean and odorless by means of lint protectors, metallic filters and activated-carbon air-purifier units. The air-conditioning system changes the air in the car 1½ times per minute when in operation, and it has adequate capacity for precooling of cars at terminals before departure. It will maintain an inside temperature of 82 deg. dry bulb with a full passenger load of 78 people, when the outside temperature is 100 deg. dry bulb, and 78 deg. wet bulb. Air is circulated at the rate of 2,400 cu. ft. per min. with 25 per cent of make-up fresh air.

Compressor and condenser units are located under the car. The evaporators are of the split type, having d.c. motor-driven blowers, and are located overhead between saloons. The compressor operates at approximately half-speed when a reduced section of the evapo-

rater is in use. The condensers have a water spray system with water storage and air pressure tanks under the car. Operation of the sprays is controlled by compressor head pressure.

The recirculating-air grill is located in the end of the car in the passage-way ceiling, with fresh-air intake through the vestibule ceiling. The metal air filters (two per car) which pass both fresh and recirculated air are located between the recirculating grill and the blowers. Two activated-carbon air purifying units are located in the framing above the recirculating air grill. There is also a lint screen above the grill. All filters and grills are easily removable for cleaning or replacement. There are two, 200 c.f.m., 9-in. exhaust fans located at the smoking-lounge end of the car. Also two 50 c.f.m. exhaust fans one for the electric locker and men's saloon, and other for the powder room in the women's saloon. There are also two 50 c.f.m. static exhaust ventilators, one near each saloon in the passenger compartment.

Conditioned air is delivered into the car by a delivery duct extending the full length of the main compartment. This duct has adjustable slides and there are hinged panels at each side to permit cleaning of the duct.

Side-wall heating is supplied by 1⅜ in. copper-fin radiation with loop equipment and thermostatic control. Overhead heating is also used with controls which operate in conjunction with the side-wall heating controls.

Heat controls insure proper inside temperatures with any outside temperature. Even in the event of failure of the heating control, heat is supplied to the car all of the time it is on steam.

A public address system is available for communication and announcements in individual cars or in all cars throughout the train. There is one microphone in each car in the passageway in a small wall cabinet. There are two speakers in the air duct, one near each end of the passenger space. A switch at the microphone permits talking to the individual car or to the entire train. Electro-pneumatic door operators open doors by a passenger's touch, from either the outside or the inside of the car and close the door automatically. An electric drinking water cooler operates from the 110-volt, a.c. power supply.

Partial List of Materials and Equipment on the New York, New Haven & Hartford Streamline Coaches

Axles ..... Bethlehem Steel Co., Bethlehem, Pa., Carnegie-Illinois Steel Co., Pittsburgh, Pa.
Bearings, journal ..... Fafnir Bearing Co., New Britain, Conn.
Bearings, side, truck .... Symington-Gould Corp., Rochester, N.Y.
Brakes, air ..... Westinghouse Air Brake Co., Wilmerding, Pa.
Brakes, clasp ..... American Steel Foundries, Chicago
Couplers and yokes ..... American Steel Foundries, Chicago, Buckeye Steel Castings, Co., Columbus, Ohio, McConway & Torley Corp., Pittsburgh, Pa., National Malleable & Steel Castings Co., Cleveland, Ohio, Symington-Gould Corp., Rochester, N. Y.
Draft gear, rubber mat type ..... Waugh Equipment Co., New York.
Metallic steam connections ..... Barco Mfg. Co., Chicago
Center pin assemblies, bolster locking ..... W. H. Miner, Inc., Chicago
Shock absorbers ..... Monroe Auto Equipment, Monroe, Mich.
Springs, truck ..... American Locomotive Co., Schenectady, N.Y.
Trucks ..... General Steel Castings Corp., Eddystone, Pa.
Signal equipment, air ..... Westinghouse Air Brake Co., Wilmerding, Pa.
Wheels ..... Bethlehem Steel Co., Bethlehem, Pa., Carnegie-Illinois Steel Corp., Pittsburgh, Pa., Standard Steel Works Div., Baldwin Locomotive Works, Burnham, Pa.
Batteries ..... Electric Storage Battery Co. Philadelphia, Pa.
Charging receptacles, battery ..... A. & J. Anderson Mfg. Co., Boston, Mass.
Receptacles, a.c. standby ..... Pyle-National Co., Chicago
Generator drive ..... Spicer Mfg. Co., Toledo, Ohio
Motor-generator equipment ..... General Electric Co., Schenectady, N.Y.
Terminal boards for m-g. equipment ..... Safety Car Heating & Lighting Co., New York
Motor alternators ..... Safety Car Heating & Lighting Co., New York
Switch panels ..... Safety Car Heating & Lighting Co., New York
Heating equipment ..... Vapor Car Heating Co., Chicago
Clamp for steam pipe ..... Illinois Railway Equipment Co., Chicago
Air conditioning ..... Frigidaire Division, General Motors Corp., Dayton, Ohio
Air distributors ..... Safety Car Heating & Lighting Co., New York
Fans, exhaust ..... Safety Car Heating & Lighting Co., New York
Filters ..... Air Devices, Inc., New York, Farr Co., Los Angeles, Calif.
Registers and grills ..... Barber-Colman Co., Rockford, Ill.
Insulation, car (stonefelt) ..... Johns-Manville Sales Corp., New York
Insulation, sound deadener ..... J. W. Mortell Co., Kankakee Ill.
Insulating units, truck and body side bearings ..... Fabreeka Products Co., Boston, Mass.
Paint materials:
Exterior sides & vestibules ..... E. I. du Pont de Nemours & Co., Wilmington, Del.
Roof ..... Patterson-Sargent Co., Cleveland, Ohio
Interior ..... Pittsburgh Plate Glass Co., Pittsburgh, Pa., Sherwin-Williams Co., Cleveland, Ohio
Public address system ..... DeMambro Radio Supply Co., Cambridge, Mass.
Odor absorbers, Dorex ..... Tuco Products Co., New York
Chairs, smoking compartment ..... General Fireproofing Co., Youngstown, Ohio
Seats, passenger ..... Heywood-Wakefield Co., Gardner, Mass.
Upholstery:
Seats, passenger ..... Goodall Fabrics, Inc., New York, Sidney Blumenthal Co., Inc., Shelton, Conn., Massachusetts Mohair Plush Co., Boston, Mass.
Seats, smoking compartment ..... Goodall Fabrics, Inc., New York.
Baggage racks ..... Rostand Manufacturing Co., Milford, Conn.
Smoking stands ..... Rostand Manufacturing Co., Milford, Conn.
Guards, window ..... Rostand Manufacturing Co., Milford, Conn.
Capping, window ..... Westinghouse Electric Corp., Micarta Div., Trafford, Pa.
Sash ..... Adams & Westlake Co., Elkhart, Ind.
Glass, window:
Outside ..... Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Inside and outside ..... Libbey-Owens-Ford Glass Co., Toledo, Ohio, Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Curtains, window and fixtures ..... Adams & Westlake Co., Elkhart, Ind.
Curtain material:
Pantasote ..... Pantasote Co., New York
Silk facing ..... Goodall Fabrics, Inc., New York
Lamp regulators ..... Safety Car Heating & Lighting Co., New York
Lighting fixtures ..... Safety Car Heating & Lighting Co., New York
Lights, marker ..... Lovell-Dressel Co., Arlington, N. J.
Covering, floor, rubber tile ..... Hood Rubber Co., Watertown, Mass.
Door closers ..... National Pneumatic Co., Rahway, N. J.
Doors, trap ..... O. M. Edwards Co., Syracuse, N. Y.
Doors ..... Pullman-Standard Car Mfg. Co., Chicago
Curtain, vestibule ..... Adams & Westlake Co., Elkhart, Ind., Morton Manufacturing Co., Chicago
Diaphragms, vestibule ..... Morton Manufacturing Co., Chicago
Cabinets:
Toilet paper ..... Griffith-Hope Co., West Allis, Wis.
Paper towel ..... Griffith-Hope Co., West Allis, Wis.
Hoppers ..... Dayton Manufacturing Co., Dayton, Ohio
Hopper seats ..... Crane Co., Chicago
Lavatory, china ..... Crane Co., Chicago
Deodorant (for salons) ..... Rochester Germicide Co., Rochester, N. Y.
Chairs, vanity ..... Coach & Car Equipment Co., Chicago
Table vanity ..... Wood Plastics Co., Cambridge, Mass.
Containers, drinking cup ..... Logan Drinking Cup Div., U. S. Envelope Co., Worcester, Mass.
Water coolers ..... Westinghouse Electric Corp., East Pittsburgh, Pa.
Smoking signs, aluminum ..... Etched Products Corp., Long Island City, N.Y.
Mirrors: ..... Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Mirror frames:
Round ..... Rostand Manufacturing Co., Milford, Conn.
Rectangular ..... Adams & Westlake Co., Elkhart, Ind.

WHAT'S AHEAD IN EMPLOYEE RELATIONS

Improved relations with employees will come by greater attention to non-financial incentives and to establishing better two-way communication between management and workers

By DR. CLAUDE ROBINSON
President, Opinion Research Corporation

It is surprising at times how closely we can anticipate social trends by studying the past and by correctly evaluating current indications. It is in this spirit that I approach the subject of what we can see ahead over the near-term in employee relations.

The idea that production is a blending of engineering and machine know-how, on the one hand, and human relations on the other is well illustrated by an experience that I had not long ago when visiting one of our great American factories. The assistant works manager was a graduate of M.I.T., skilled in production engineering. He had just installed some new equipment. The new equipment had cost a good deal more than the old, but lo and behold, it was turning out exactly the same amount of work. In other words, this engineer was learning that while his problem of mechanics was solved, he had not solved his problem in psychology.

There has been a great change over the past twenty years in our conception of the problems of management in relation to employees. I like to phrase it this way: We used to operate by what I call the *technique of ordering and forbidding*. That day is gone and we must operate now and in the future by what we might call the *technique of engineering consent*. This technique of engineering consent is quite a different process from the technique of ordering and forbidding.

I should like to make three points in anticipating the future in industrial relations.

Pay Is Not Everything

First, we must recognize that employees seek spiritual as well as economic satisfaction from their jobs. Many employers still think only in terms of putting it in the pay envelope. But pay is not everything. Non-financial incentives—projects that feed the human spirit—are frowned on by many owners and managers of business as silly. They do not believe that sort of thing can be justified in any hard-boiled operation. That is an incorrect view and the evidence on that point is very clear. For example, my organization, the Opinion Research Corporation, has made literally scores of community studies where we have asked among other things: Where do you think is the best place to work in this town? And we find time after time that the company which pays the highest wages is not necessarily named as the best place to work.

This article is an adaptation of an address given at the Fourteenth Institute on Industrial Relations of the National Association of Manufacturers at Chandler, Ariz., on April 6.

Conversely, the company that is named as the best place to work frequently does not pay the highest wages. That is one kind of evidence. Further evidence comes from the analysis of morale, or job satisfaction. First we get people to tell us whether they are "very well satisfied," "medium satisfied," or "dissatisfied" with their jobs, then get them to testify on what things they like least and what things they like best about their jobs. From the analysis we can find which factors are most critical to high morale. We find that non-financial incentives are at the top. Interesting work, job security, the interest the company takes in them, the chance for advancement, working conditions, grievance procedure—all these considerations rank above pay in the factors affecting morale.

Job satisfaction is definitely greatest where men get some spiritual satisfaction from their work. So it seems obvious that if we are going to be realistic about the handling of human beings in our places of business we must give more attention, as a practical matter, to providing incentives of the non-financial type.

I am coming to believe more and more that the effort to secure understanding of this fact must be carried finally to the boards of directors, because we see over and over again that the presence of top-policy decision makes for success and the absence of it makes for failure. It is difficult for a forward-looking industrial relations man to head his company in this direction unless he has the understanding and support of the policy-making officers of the company. Certainly in the years to come industrial relations must move in this direction.

My *second point* is this: Over the next few years industrial relations will inevitably pay much more attention to the problem of "communication." I suppose we should use the phrase "two-way communication," since processes must always be visualized in terms of a flow of ideas from employees to employers, as well as the other way round. One of the things that strikes us as observers and students of American opinion is that the working man is a reasonable individual. He is seeking the fair way. He has a sense of justice and he desires to play on the team. It is an error to believe that workers are essentially hostile to management. On the contrary, they would like to be given an opportunity to collaborate and cooperate with management. We find, for example, that even among the most militant union members, about 50 per cent of the workers can be classified as very well satisfied with their jobs. So there is a great reservoir of good will among the employee public that can be appealed to, but the necessary link to the tapping of that good will is the "line of communication."

We find in our studies, for example, that there is a tremendous criticism of management because of the

feeling that management somehow does not care. Testimony on the evaluation of business indicates that this is one of the most frequent criticisms. You hear that managers manage without heart, that they somehow do not understand the humanity of their problems. As companies grow larger, the human touch tends to disappear. We also find there is great ignorance in the minds of people about the way the system of private business enterprise works.

It is perfectly clear to our organization, and I think we have demonstrated it in a dramatic way in our Public Opinion Index for industry studies, that there is a relationship between ignorance of how the economy works and a desire to have somebody else, namely a labor union leader or government man, sit in the position of the manager and make the decisions to run the business. We have frequently pointed out to our industry friends that there is great ignorance about profits; for example, workers think that companies make on the average of 25 per cent on sales. They do not say that profits are bad but they say too much profit is bad. With this idea so widespread, it is readily understandable why workers after the war made great sacrifices of wages by striking—in some cases for as long as three or four months—seeking what they regard as only justice.

Also notice the union propaganda that centers around the theme that companies make too much and that it is the business of the union to get a fair division of what is made. Notice too, the propaganda surrounding the use of the word "capital." "Capital" to many people is an exploiter taking things that don't belong to it. Somehow the machine is inimical to man, it puts people out of work. There is a great deal to be done in management circles, therefore, in communicating to employees the simple facts on which our economy and their welfare is based.

Employee Magazines

I should like to mention some of the media by which a "line of communications" with employees is maintained. For example, the company publication is an extremely important line of communication from the front office to the shop. There are over 5,000 such publications in this country. You know they have power. Examining employee behavior, we find from 50 per cent to 75 per cent read these publications within a week after they are released. We find three-fourths of employees say that the money that is used by the company in putting out these publications is well spent, and we find from 75 per cent to 90 per cent of employees saying that "you can believe what you read in the plant publication." I am sure that industry generally has not quite realized the tremendous importance of the company publication as a means of communication, because too often an editor is employed at $40 to $50 a week and put off in a corner somewhere to run the magazine.

My conception of proper procedure, considering the importance of this channel of communication, is that companies should hire the best editor they can possibly get, and that editor should have a top-policy declaration as to what his functions are. Furthermore, he should have contact with top people to discuss the history and tradition of the company, to discuss the meaning of policy, to get some feel of management's point of view so that he can pass it on to employees.

Management often expresses wonderment at why people are so tenacious in their illiteracy about economic processes. One reason that such illiteracy is not dissipated is that we have not organized competently to dissipate it. For example, when we analyze the editorial affairs of company publications we find that they pay a lot of attention to matters having to do with personal recognition, hobbies, awards, personals, committees, stories about the product, admonitions on safety, and so forth; but, curiously enough, there is very little discussion about the system and the underlying procedures which make jobs, which make wages and which guarantee the future. Only a third of the papers that we have examined are doing much of anything along this line.

Excessive Fear of Propaganda

One of the reasons for lack of editorial matter of this kind is the fear of propaganda. Yet we know that some companies have called a spade a spade, have been honest in their discussion of company policy, of the economics that guide and control company operations. We know there is a hunger for that sort of thing. Articles of that type get excellent readership. Furthermore, it is evident to us from examining experience that if the editorial or the article is honest and sincere you can say anything about the business that you please and you do not need to fear that people will call it propaganda. It is true that people do not like to be talked *at* but they like to be talked *with*. We must get our thinking straight on this matter of propaganda. For some curious reason we have the idea that if we talk to people about the business they will call that propaganda. Actually that is not so.

Another good medium of communication is the annual report. It is perhaps more important to large concerns than small concerns. Some management people say, "Well, it is none of the employees' business. It is not in their bailiwick." But when they talk that way, all they are saying is that they are abdicating this field to rumor and to people who wish to detract from business and who are not too careful about facts.

We have had the opportunity to examine a good many employee reports under our microscope, and from the way employees react we can discern major chances for improvement. Frequently annual reports talk over employees' heads; they are too statistical; they employ terms that are too complex. Another way they can be improved is by talking to the employee in terms of what he gets out of it. In other words, like all of us, the employee is interested in how things affect *him;* yet I have seen many annual reports companies send to their employees that talk at length about the company but do not talk anywhere about the employee and where he fits into the picture Also many of them need more animation—more pictures and thumb-nail sketches. Some companies, we have observed, feel that such techniques somehow compromise their dignity. But it isn't necessary to be dull in order to be dignified. We have sounded out people's reactions to this kind of communication, and we find that simplification and animation get good results.

Another channel of communication is the letter to

the employee. A letter to an employee has tremendous power. We have found, in recall tests, that two-thirds of the employees who receive letters are able to "play back" the main ideas. For example, the president of a large company wrote his employees a six-page letter about the business. When we first looked at it we thought nobody would read it through, but employees did read it and two-thirds of them were able to "play back" the main ideas in the letter.

Letters are essentially a simple medium; they are inexpensive; they are a medium that can be handled by a works manager who has a heart for talking to his people. They produce results with surprising economy of effort. If the manager will sit at his desk and write to employees about the business, experience shows he can get his ideas into the heads of two-thirds of the employees.

Some people feel that an employee letter should no be sent out unless the company has some world-shaking announcement to make. That opinion does not seem to hold up under the test of experience. The people who use employee letters most successfully send them every week or two weeks, or perhaps every month, and talk about anything and everything they think might interest employees. It flatters an employee to have the boss write to him a letter and tell him about the business, even though some of the things he talks about are not necessarily of a momentous nature.

Public and Industrial Relations

Another channel of communication which is very important, but which industry has not utilized to the full, by any means, is the plant meeting. It is difficult, of course, in some companies to hold meetings of this kind; the physical facilities are not available. Also there is a great disinclination on the part of many managers to stand up in front of their employees and take it as it comes. But we have observed that employees like these meetings. They like the idea of two-way communication, of being able to see the boss and talk with him, and they get a great deal out of it.

I was told the other day by a staff member of a large industry that in their Pittsburgh plant they staged a show where a panel of employees talked to management. These employees were given a guarantee of "no reprisals," so they let themselves go, and the staff people tell me that is one of the most interesting and instructive things management has ever had happen to them. This might be an idea that many more companies could use.

In the handling of the lines of communication, we find that advanced practice calls more and more for close coordination of public relations and industrial relations. The public relations man is specially skilled in the means of communication. The industrial relations man is skilled in many other things. Not infrequently one company officer is director of both public and industrial relations. Companies having a forward-looking point of view on the problem of handling the various segments of their industrial and public relations are combining their various skills to solve this problem of communication.

I believe we should always think about communication in its two-way aspects. Anyone who has observed the life of the group understands well the fact that there is wisdom in the group. I am so respectful of it in our organization, for example, that if the group is determined on a certain point of view I think a long time before venturing a veto. Even in little organizations it is extremely easy to get out of touch with people. I have seen this principle operate in widely varying circumstances; apparently the only way we can study these things objectively and properly weigh the last voice we hear, or the loudest voice, is to have some kind of systematic canvass of people's views.

Employees Like to Be Heard

There are many ways, of course, to administer these canvasses. One of the important points is the guarantee of absolute anonymity. When you use the idea of two-way communication you will find it not only gives you great insight but it also has a distinct therapeutic value. Employees think a management must be all right if it is willing to solicit the views of employees.

There is one danger, however, in using a two-way channel of communication and it is this: If it is used, then managements must be willing to do something about what they learn—either explain away or dissipate the ignorance that is discovered, or change policy in line with employees' desires. This is the second direction in which industrial relations is likely to move over the next few years, namely the streamlining of the lines of communication between the front office and the shop.

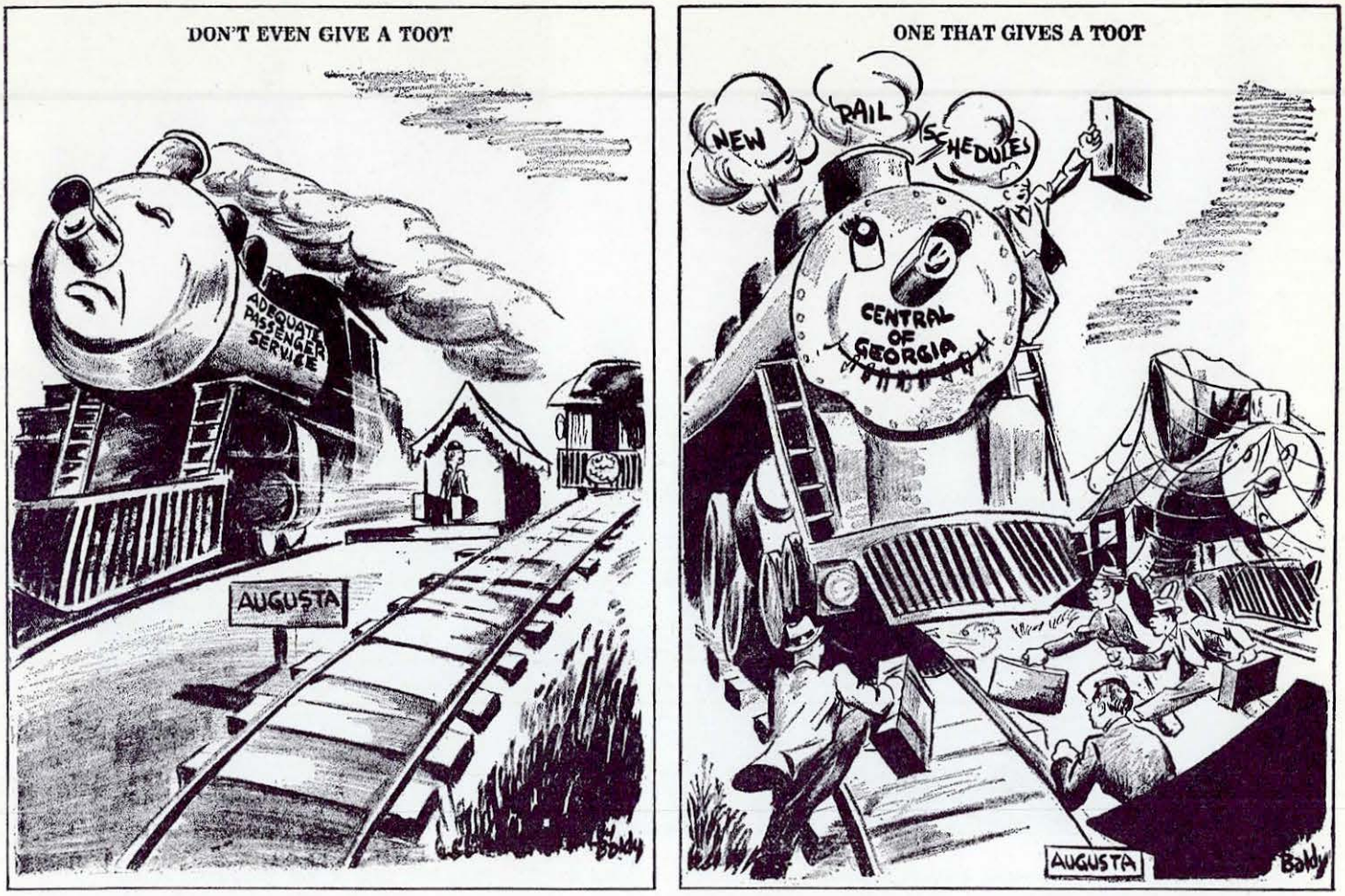
The third point is this: That over the next few years the Taft-Hartley Law is likely to define the legal environment in which industrial relations for most industry will be conducted. There may be some minor alterations in the Taft-Hartley Act as our experience grows but major alterations are not likely.

Our organization has studied the subject of the public's attitude toward labor unions for a number of years. Throughout this period it has been just as plain as anything could be that the public approves of collective bargaining. As a matter of fact, public approval of the principle of collective bargaining is now at 87 per cent, an all time high. But the public has been vastly annoyed with the stewardship of collective bargaining as exercised by unions. The people feel that unions have gone to excesses, that they have abused their power. And so public opinion favors curbing that power.

As we observe organizations, we see that no organization can operate unless it has some kind of balance between authority on one hand and responsibility on the other. Essentially that is what the public was saying about unions. They didn't define their views in these philosophical terms, but that is essentially what they had in mind—too much power had been given the unions and some kind of corrective action had to be taken to balance that power.

When the Taft-Hartley Bill was passed, the unions termed it a "slave labor bill," and spent a great deal of money attacking it. Sure enough, that campaign of labeling the bill a "slave labor bill" did befuddle the public; as I pointed out in an article in Look magazine, 54 per cent of white-collar and manual workers said the bill should not have been passed; about two-thirds

(*Continued on page 72*)



Baldowski in Augusta (Ga.) Chronicle

Newspaper's satire was turned to applause by Central of Georgia's fare and service improvements

REDUCED FARES BRING NEW BUSINESS

Central of Georgia increases total passenger revenues by lowered fares, modern streamlined equipment and continuous publicity

Low round-trip fares, the installation of two modern streamlined coach trains on Georgia intrastate runs, and a well-directed advertising and publicity campaign have proved most successful in increasing passenger revenues on the Central of Georgia. The advertising has been built around the slogan, "A round trip on the Central costs less than gas for your car," a claim which is easily substantiated.

On May 15, 1947, the road published special five-day round-trip fares at 1.32 cents per mile, effective intrastate in Georgia. At that time, the existing standard round-trip fare was on the basis of 1.98 cents per mile. On March 1, 1948, the intrastate and interstate fare in general effect throughout the territory was raised to a basis of 2.25 cents per mile. Hence, the Central's special fare basis is 41 per cent below standard fares.

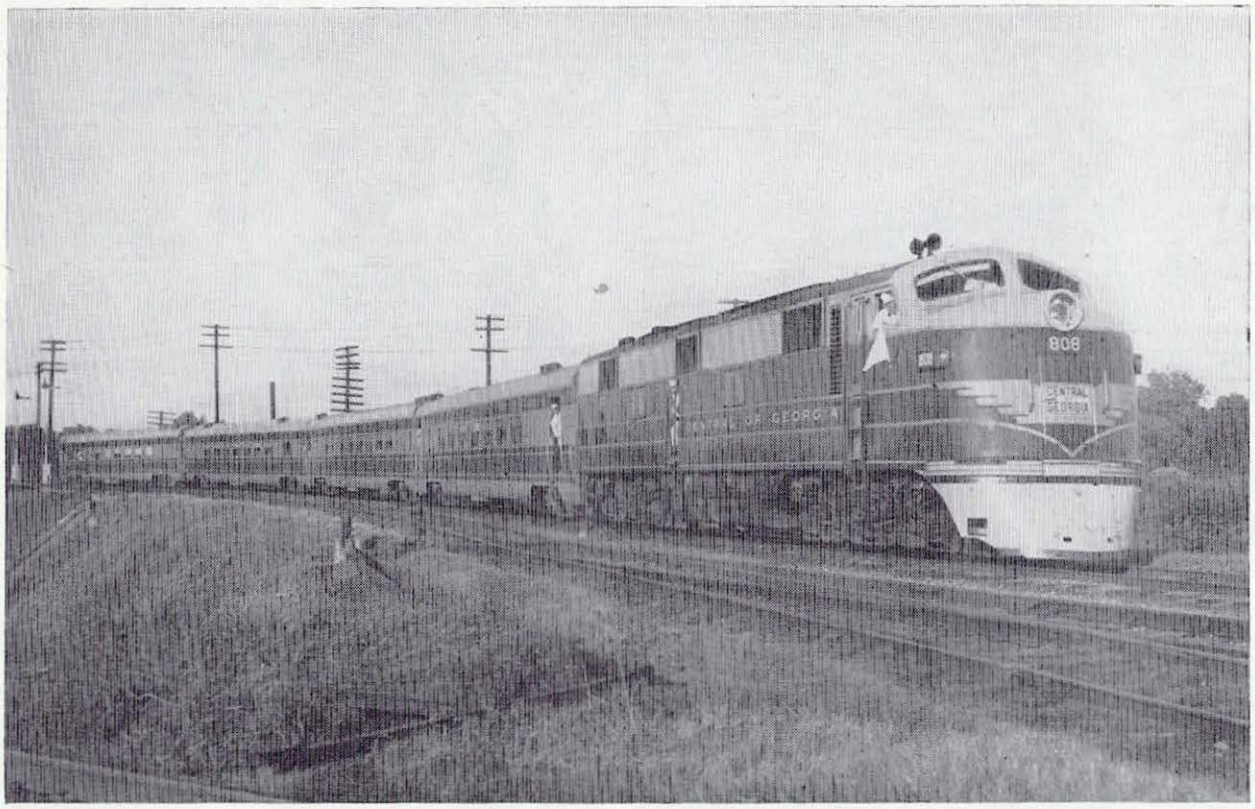
The Central of Georgia is a firm believer in securing profit through volume attracted by low prices for service. The management is consistent in this policy. At all stations controlled by this road, for example, the per-bag red-cap fee remains at 10 cents, although at many other stations in the country the charge has been raised to 15 cents.

The two new streamliners offer contrasting opera-

STREAMLINER NAME WORKS ITSELF INTO TABLE-TALK

So popular is the Central of Georgia's "Nancy Hanks II" streamliner between Atlanta and Savannah that its name has become a common verb in the social columns of a Savannah newspaper, as in, "Mrs. Smith has 'nancyhanksed' to Atlanta to visit Mrs. Jones."

What did it? Lower-than-normal fares; good equipment and continuous sure-fire promotion work, as described herewith.



"Nancy Hanks II" operating between Savannah and Atlanta has earned over $2 a train-mile since it was inaugurated in 1947

tions for the purpose of study of revenue production. "Man o' War," operating between Columbus and Atlanta, replaces four steam trains. "Nancy Hanks II," operating between Savannah and Atlanta, on the other hand, represents an entirely new service. The trains are alike, nevertheless, in that their earnings have averaged well over $2 a train-mile since they were inaugurated in 1947. The total earnings of each amounted to more than a quarter million dollars in less than a half year's operation.

Advertising and Promotion

The new trains were launched with considerable fanfare, and advertising of their service, as well as of the new low fares, has been on a continuous basis. One interesting advertising method has been the use of a series of ads in pseudo-classified form, such as: "For Rent—Plenty of seats on the 'Nancy Hanks II'; the new Central of Georgia streamliner to Atlanta." Two illuminated billboards in strategic locations in downtown Atlanta also point up the new trains. Among the most striking examples of billboard advertising in the country, the signs depict the two trains in cleverly simulated motion. Frequent references to the new trains appear in the newspapers; one society editor has invented a new verb and frequently announces that: "Mrs. Smith has 'nancyhanksed' to Atlanta to visit Mrs. Jones."

Corollary advertising and publicity have also been secured in numerous instances. The Chamber of Commerce of Macon used a large-space ad in several newspapers at the beginning of the Christmas shopping season, featuring the convenient schedule of "Nancy Hanks II" for shoppers' use in coming in to Macon. A group of hotels on the beaches near Savannah have set up a series of all-expense tours from inland points to such beaches and return and literature thereon features the round-trip on "Nancy Hanks II" as a considerable part of the attraction.

Children are being made train- and railway-conscious through the medium of special trips on one of the new streamliners. The schedule of "Nancy Hanks" is such that it has a 4-hr. 20 min. layover in Atlanta each day. During the school year, the Atlanta board of education has selected a different school each month as the "Nancy Hanks School of the Month" and the railway takes the pupils of this school (usually numbering between 450 and 500) on a round-trip ride between Atlanta and Griffin, 85 mi., supplying them with ice cream en route. The response from such trips has been highly satisfactory. Thousands of letters have been received from the children and from their parents as well. The schools in question have also given some of the lessons a railway angle. Art classes have made several hundred drawings of "Nancy Hanks II," the best of which are on display at the various schools. Even the prosaic arithmetic classes show a railway atmosphere, since they now cogitate on such problems as: "If the fare on 'Nancy Hanks II' from Atlanta to Griffin is $1.15 and the federal tax is 15 per cent, what is the total fare?"

Special trips on Central of Georgia streamliners create railroad-minded youngsters

The other streamliner, "Man o' War," makes two round trips daily between Columbus, Ga., and Atlanta, thus piling up 468 mi. daily. On June 24, 1947, it replaced four steam trains which were losing money at the rate of about $150,000 annually. These trains had been earning up to $6 per train-mile during the war, when the infantry post, Fort Benning, just outside of Columbus, ran in high gear. At present, the number of men stationed at this encampment and the military movement into and out of this troop training center is almost the exact equivalent of what it was in October, 1940; hence, any comparison of the drawing power of "Man o' War" and the steam trains must be based on a period of comparable military activity as well as a month of heavy Army travel. For this reason, earnings of the former steam trains are set forth herewith for two periods:

Train No.	Revenue per Train-Mile Oct. 1940 (cents)	Oct. 1946 (cents)
17	26.7	81.7
18	90.4	101.2
19	55.6	140.4
20	43.1	140.2
Average	53.9	115.9

In contrast, "Man o' War," making all four runs, averaged 202.7 cents per train-mile from the time it was inaugurated on June 24, 1947, until the end of the year—and without the benefit of heavy soldier travel. When it is considered that "Man o' War" passengers included a large number traveling on the reduced fare tickets, thereby reducing revenues relative to patronage, it is evident that service and public appeal have greatly increased this route's attractiveness. In the period named, 86,139 revenue passengers were handled on this train, which consists of a mail-express car, a baggage-chair car, two chair cars and a tavern-observation car built by the Budd Company and hauled by a 2,000-hp. Electro-Motive Diesel locomotive. (See *Railway Age* of August 16, 1947, page 46.)

A New Run

"Nancy Hanks II" was put in service on a daily round-trip Savannah-Atlanta run on July 17, 1947. (See *Railway Age* of August 9, 1947, page 52.) It comprises "Sunliner" cars produced by the American Car & Foundry Co. and is powered by an Electro-Motive Diesel. It was an addition to the timetable, all steam trains then in operation on the route being continued in service. The new train leaves Savannah at 8 a.m., arriving in Atlanta at 1:40 p.m. Leaving Atlanta at 6 p.m., it arrives in Savannah at 11:40 p.m., thus making a daily round trip of 587.4 mi.

Of the steam trains on the same route, Nos. 1 and 2 are purely local day trains. Since the leaving time of No. 1 from Savannah is approximately the same as that of the streamliner, while the latter beats No. 1 into Atlanta by 3 hr. 20 min., considerable business has been taken from No. 1. The other pair of steam trains, Nos. 3 and 4, are night trains, supplying both coach and Pullman service between Atlanta and Savannah. The evening departure of the streamliner, with arrival in Savannah before midnight, has, of course, taken considerable traffic from No. 4. On the other

(*Continued on page 73*)

BRITISH RAILWAYS USING CONCRETE TIES

Because of shortage of suitable timber supplies, substitute units, with prestressed reinforcing, are now being made on mass-production basis

By R. L. M'ILMOYLE

Assistant Engineer of Structures
London Midland Region, British Railways
London, England

Concrete crossties with prestressed wire reinforcing are now being manufactured on a mass-production basis for use on the British railways. First introduced during the recent war to combat a serious shortage of timber crossties, which has continued into peace-time, the concrete ties have given satisfactory results in service tests in main-line tracks in England, and are also being tested on railways in Ireland, Egypt, India, New Zealand, South Africa, the Sudan and the Netherlands. The present purchase price of the concrete ties is about $7.70 each, which compares with a cost of about $5 each in England for creosoted timber ties.

For a number of years prior to the recent war, practically all of the crossties used by the British railways were imported for the reason that home-grown timber was either unsuitable for treatment or the small quantity of suitable timber that was available was too small in section to be converted into ties. Most of the ties came from the Baltic countries and were, for the most part, of Baltic redwood, but a large number of Douglas fir ties was imported from Canada and the United States.

Reason for Prestressing

During the war little or no timber was imported from the Baltic area and the same situation prevailed with regard to imports from North America. Accordingly, the British railways were faced with the necessity of providing an alternative to replace their timber ties as renewals became necessary. In 1941 these roads adopted a set of specifications for reinforced concrete ties, which not only set forth standards with regards to materials and tests, but also laid down a minimum bending moment on the critical section in the ties.

A number of companies submitted designs for ties based on these standards, one of which—submitted by the Prestressed Concrete Company—involved the relatively new principle of prestressing the reinforcing material in the tie while the concrete is being cured. After curing, the tension is released and the resulting contraction of the reinforcing sets up a permanent compressive stress in the concrete. The compression insures that no hair cracks will develop under the designed load conditions and the factor of safety allowed.

As a means of determining the relative merits of the various designs of concrete ties submitted for consideration, the London, Midland & Scottish (now the London Midland region of the British Railways) undertook a series of service tests. A length of main track over which trains normally passed at a speed of about 70 m.p.h. was selected for the test and consecutive 60-ft. stretches of this track were laid with concrete ties of each design.

The primary object of this investigation was to measure the stresses imposed on the ties by the passage of trains, the reaction between the under side of the chair* and the tie, and the reaction between the tie and the ballast. The results of these tests led to a revision of the original specifications, in which the design loads and permissible stresses were more completely dealt with, and which included special clauses relating to the design of prestressed ties. In the tests such ties had shown themselves to be superior in performance to any of the other types of concrete ties.

The end of the war did not bring an end to the problems of the British railways with respect to the procurement of timber for crossties. On the contrary, the situation has become even more acute, with the result that the government has decided that the shortage can be met only by the large-scale manufacture of ties of the prestressed type. The patent rights for the manufacture of the prestressed ties have been acquired by Dow-Mac, Ltd., and this company has built a factory capable of producing 4,000 of these ties at one time. In addition, the government has made arrangements for some ordnance depots to take over the manufacture of additional prestressed ties of the Dow-Mac design.

The Manufacturing Plant

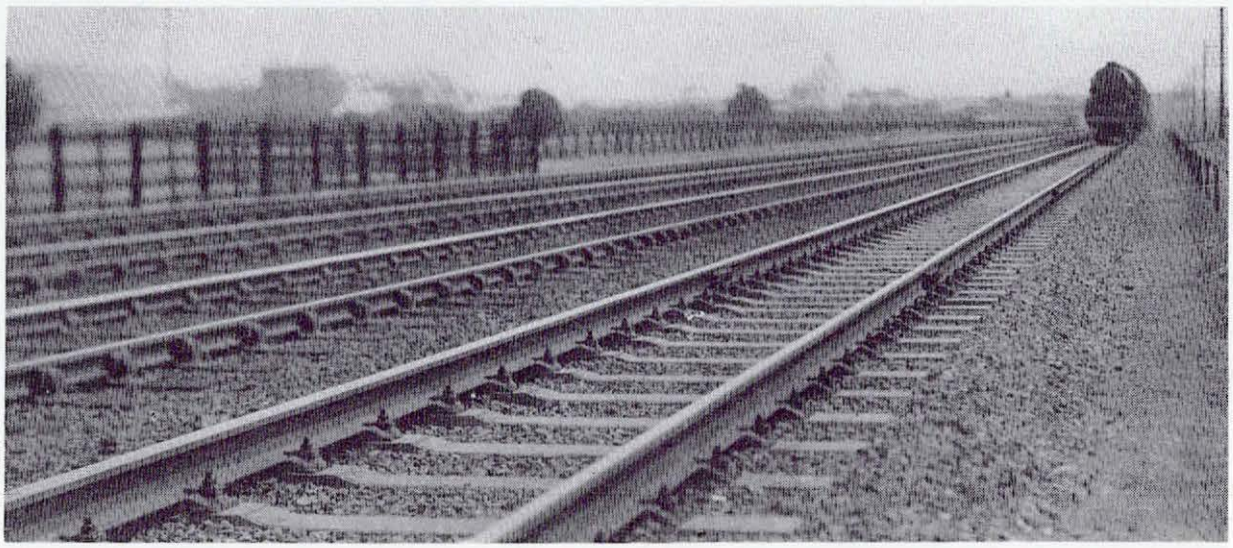
The production of the concrete ties at the Dow-Mac plant is fully mechanized but is closely controlled so that the ties are uniform with respect to the concrete mixture and the degree of prestressing. The factory has two manufacturing areas, each 140 ft. by 500 ft., allowing for a total of 40 production lines, each accommodating 100 standard main-line ties. Each of the production lines is a waist-high roller-conveyor, sufficiently long to accommodate two lines of 50 ties each, with mass concrete abutments at each end. The abutments support heavy steel structures to which the reinforcing wires are anchored during the prestressing process.

The molds, or forms, used in the manufacture of the ties consist of open steel troughs with removable end plates, the plates being punched with holes to ac-

* The "bullhead" rail section is widely used in England and the European countries. This rail has a rounded base and is held in position by cast-iron supports, or chairs, which fit snugly around the base and are bolted to the ties or fastened to them with screw spikes. Increasing use is now being made of "flat-bottom," or T-section rail, supported on cast-iron plates.

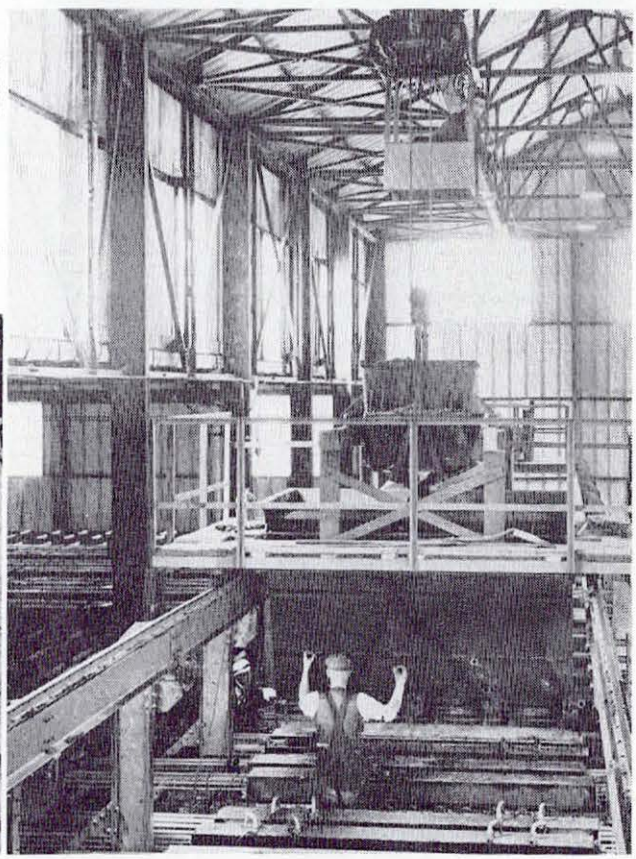
commodate a series of reinforcing wires and secured to the molds by means of wing nuts.

Steel wire of 0.2 in. diameter, with an ultimate tensile strength of 100 tons per sq. in., is used for reinforcing. The wire reels are carried on a truck moving on a transverse track at one end of the production area adjacent to the line of abutments. The wires are drawn off under semi-tension and, in the process, pass through a scrubbing box in which they are cleaned with carborundum. They are then threaded through the proper holes in all of the 50 pairs of end plates for one production line, after which they are secured, at

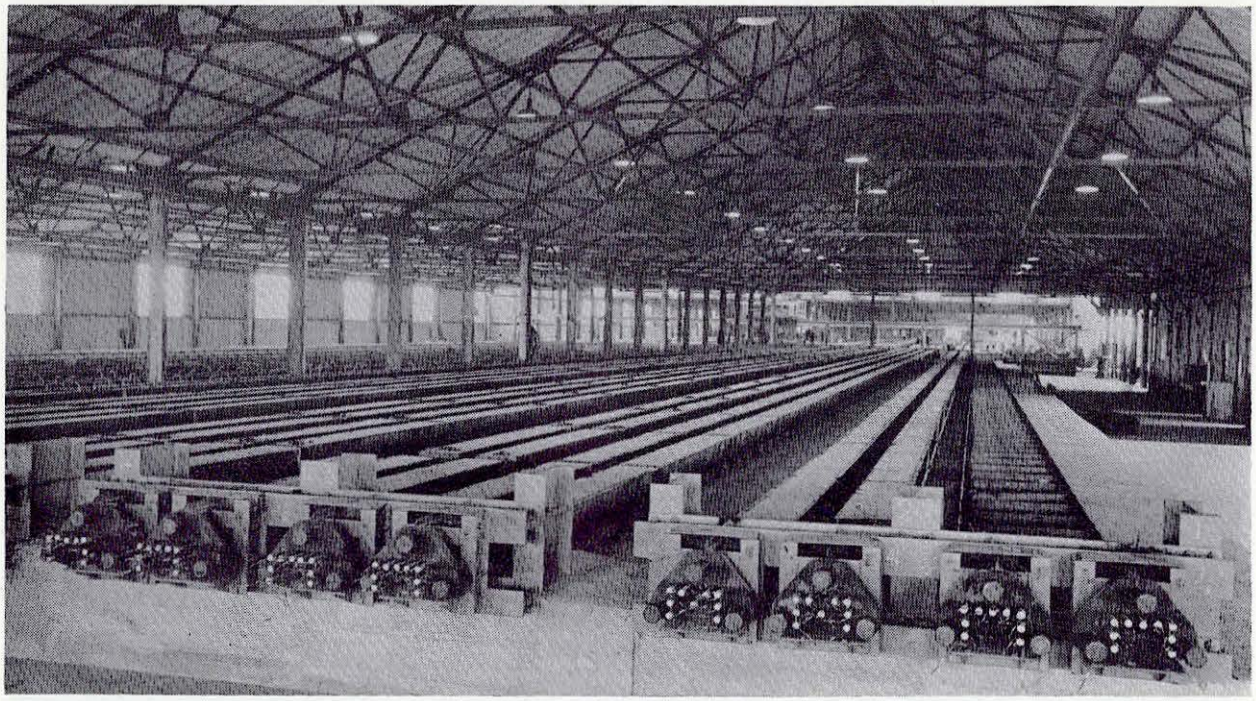


The track in foreground is laid on prestressed concrete ties. The rails are of the flat-bottom (T-section) type and rest on cast-iron sole plates

Right—Casting the concrete ties from a movable hopper that moves on an overhead runway across all the production lines in the factory. After filling, the forms are vibrated and moved along on the conveyor to the storage area



Below—Ties in the final position in the production line. Here they are troweled and again vibrated



General view of a concrete tie factory showing ties undergoing the curing process

the far end, by means of wedges, to a fixed anchor plate in the steel work of the abutment at that end. The wires are then cut at the reel and the free ends are passed through a similar anchor plate at the adjacent abutment. The proper tension is then applied to the wires, one pair at a time, by an hydraulic cylinder with an automatic cut-out. The wires are then secured to the anchor plate by wedges.

Assembling the Molds

The molds are assembled at an assembly table by passing the trough section of each mold under the taut wires and securing a pair of end plates to it. Rods are inserted through clamps at the tops of the molds and extend through holes in the bottoms so that properly located holes will be formed in the ties to accommodate the bolts for fastening the chairs, or sole plates.

The empty mold then moves along the conveyor to the concreting position. Here it is filled with concrete from a movable hopper traveling on an overhead runway extending across all of the production lines. The hopper is designed to discharge, at one time, all the concrete needed to fill one mold. A vibrating table is located at the concreting position in each line, thus allowing the use of a relatively stiff mix in which the water-cement ratio is 0.39, or approximately 4.5 gal. per sack of cement.

As soon as the molds are filled and vibrated they are moved along the conveyor to their final places in the production line. During this movement, the stretched wires move through the concrete in the molds. When the molds reach their final positions, the concrete is troweled and the molds are given a second vibration with a portable electric vibrator to improve the consolidation of the concrete and insure a perfect bond between the concrete and the reinforcing wires. The concrete is allowed to cure for 10 to 14 days, depending upon weather conditions, during which time the tension in the wires is maintained at a constant level.

When the concrete has cured, the wires are cut at one end of each row, thus releasing the tension between the ties, after which the removable end plates of the molds are removed and the wires are burned off flush with the concrete with an oxyacetylene cutting torch. Removal of each tie from the mold is accomplished by turning the mold over and lifting it off.

Costs Now Lower

This method of manufacture requires only three minutes working time per pair of ties for concreting and removing the molds. A similar period is required for the wiring process. Mass-production methods have reduced the manuufacturing costs approximately 88 per cent in six years.

The prestressed ties installed for test purposes in the main line of the London, Midland & Scottish have now been in service for five years, during which time they have been subjected to traffic which is estimated to be equivalent to approximately 12 years' service on ordinary main-line routes. The prestressed tie has been relatively satisfactory under slow-moving traffic. However, in spite of its success in the main-line tests, it is too soon to say that it will have an economic life under these conditions. New designs are now being prepared which are expected to give even better performance, but these have not, as yet. come into regular production.

STANDARDS OF RATE REASONABLENESS IN CANADA

An increasing divergence from standards effective in the United States is observed; three types of tariffs are authorized

By G. LLOYD WILSON
Professor of Transportation and Public Utilities
University of Pennsylvania

The criteria of judgment with respect to the reasonableness of transportation rates and charges are troublesome questions in Canada as they are and have been in Great Britain and in the United States.

The basic requirements of Canadian law on this matter are found in the Railway Act, 1919. (1) The act provides, among other things, that all rates, charges or tolls, upon traffic of the same description over the same route shall be charged equally to all persons, and no toll shall be charged which unjustly discriminates between different localities.(2)

The Board of Railway (now Transport) Commissioners is directed not to approve or allow any toll which is greater for a shorter than for a longer distance, for like description of goods or for passengers, carried under substantially similar circumstances and conditions in the same direction, over the same line or route, and the shorter distance being included in the longer. The board may allow rates or tolls which violate this provision of the act if it is satisfied that, because of competition, it is expedient to allow them. The board has discretion to declare places competitive points within the meaning of the act for the establishment of such rates.(3) This provision of the Canadian act corresponds generally to the provisions of the long-and-short haul clause of the Interstate Commerce Act of the United States.(4)

Transport Board's Jurisdiction

Railway companies are specifically forbidden by the Canadian Railway Act to give any undue or unreasonable preference or advantage to any person or description of traffic with respect to transportation services or rates.(5) The board is empowered to make declaratory regulations declaring what shall constitute "similar circumstances and conditions" or "unjust or unreasonable preference, advantages, prejudices or disadvantages," within the meaning of the Railway Act, and it may declare what shall constitute compliance or non-compliance with respect to the provision of the act with respect to the equality of rates and facilities.(6)

The board has jurisdiction in cases of alleged unjust discrimination or undue preference and the burden of proof to show that differences in services or charges are not unjustly discriminatory or unduly preferential lies upon the transportation carriers performing the services or charging the rates.(7)

The board is authorized to prescribe or authorize the classification to govern the carriers' tariffs, which is required to be uniform "as far as may be, having regard to all proper interests," throughout Canada. The board may allow or direct changes to be made in class ratings.(8) Tariffs of tolls or charges must be prepared and issued by the carriers. These "by-laws" must be submitted to and approved by the board. They are subject to changes to be ordered by the board or approved by it. No tolls may be collected unless authorized by tariffs approved by the board. The form and style of tariffs are subject to the board's approval, and any tariff may be disallowed if not approved.(9)

Three Tariff Categories

The act authorizes railways to issue three classes or types of tariffs, viz.:

1. Standard freight tariffs are those which specify maximum mileage rates or tolls to be charged for each class of freight classification for all distances covered by each railway. These tariffs correspond in a general way to class-rate tariffs issued by railroads in the United States.
2. Special freight tariffs are those which name rates, lower than those in the standard freight tariffs, which are charged upon commodities or classes of traffic to and from certain points on the railways. These tariffs may not publish rates which are lower for shorter than for longer hauls within which the shorter hauls are included, in the same direction and over the same routes. These tariffs do not correspond exactly to any types of tariffs issued by carriers in the United States, but they may be compared to exceptions to the classification or commodity tariffs of restricted application, which are issued without "Fourth Section relief."
3. Competitive tariffs are those which specify rates or tolls lower than the standard tariff's which name class or commodity rates to or from points declared by the board to be "competitive points" not subject to the prohibitions of the Railway Act against higher rates for shorter than for longer hauls. These tariffs may be compared to tariffs issued by railroads in the United States which publish class or commodity rates with respect to which the Interstate Commerce Commission has granted permission to the carriers to publish rates which are Fourth Section departures.(10)

The approval of the board must be obtained prior

(1) The Railway Act, 1919, 9 and 10 Geo. V, Chap. 68, assented to July 7, 1919.
(2) Section 314 (1) and (4).
(3) Section 314, (5) and (6).
(4) Interstate Commerce Act, Part I, section 4.
(5) Railway Act, 1919, section 316, (3).
(6) Section 317 (2).
(7) Sections 319, 320 and 321.
(8) Section 322.
(9) Sections 323 to 325.
(10) Sections 328 — 329.

to the effective dates of all standard tariffs and no changes or supplements may be made in these tariffs without board approval in advance. Special tariffs must be filed with the board but specific approval is not required of the charges published unless the existing charges are to be increased. If they are proposed increases, the carriers must give 30 days' advance notice and bear the burden of proof that the proposed advances are justified. The board is authorized to make rules and regulations governing the publication of competitive tariffs. If the board deems it expedient, these tariffs may be allowed to go into effect immediately upon issuance in order to meet the exigencies of competition, or before filing with the board, or otherwise, by special order or direction of the board.(11)

The Railway Act; 1919, provides a presumption of legality of rates and charges if the tariffs are filed as prescribed by law with the board, and not disallowed by it.(12)

The board may also issue regulations permitting railways to issue special rate notices establishing rates and charges on specific shipments lower than the rates in effect between points other than those designated as "competitive points" within the meaning of the act, if the board considers that the charging of these special "notice rates" will help to create trade, develop the business of the country or be in the public interest, and not otherwise contrary to the provisions of the Railway Act. Notices of such rates on specific shipments are filed with the board.(13)

The Transport Act, 1938

The Transport Act, 1938, transformed the Board of Railway Commissioners into the Board of Transport Commissioners for Canada. It extended the duties and authority of the board to include jurisdiction over carriers engaged in transportation services by railway, water, and air. The act directed the board to perform its functions with the view of coordinating and harmonizing the operation of carriers of all these types.(14)

The act provides for the licensing of all carriers engaged in these forms of transportation by the Board of Transport Commissioners in the exercise of its discretion. The tolls of charges of all licensees must be filed with the board and are subject to detailed regulations which it is not necessary to discuss here. (15) Agreed charges may be established by agreement between carriers and shippers or consignees, with the approval of the board and under detailed regulations insuring equitable treatment of competitors, notice to the public, and publication. (16)

In 1920, the Board of Railway Commissioners for Canada, in its judgment on an application of the railway companies for authority to increase freight rates generally by 30 percent, through its chief commissioner stated that it was compelled to rely "almost exclusively" upon the condition of the Canadian Pacific "in order to arrive at proper conclusions" as to the revenue needs of the carriers because of the financial condition of the Canadian National, which had an operating ratio estimated for the ensuing year of 105 per cent.

The rate provisions of the Transport Act, 1938, do not alter the standards of criteria of reasonableness of rates as discussed in connection with the Railway Act, 1919, although there are changes in minor requirements with respect to the rates and charges and their publication.

The standards include:

1. The rates or tolls as published are considered by-laws of the issuing licensee companies;
2. The standard or maximum rates of the licensees must be approved by the board;
3. Special and competitive rates may be made lower than the standard rates;
4. There must be no unjust discrimination between localities;
5. The tolls or charges must be applied equally to persons and traffic, "under substantially similar circumstances and conditions";
6. The onus to prove freedom from unjust discrimination or undue preference is upon licensee;
7. The board must consider the public interest in deciding whether differences in treatment are unjustly discriminating or unduly preferential;
8. Special rates to create trade by notices to the board may be permitted.(17)

In November, 1920, in proceedings involving an application brought by the Provinces of Manitoba and Saskatchewan for an order suspending the increases in railway freight rates granted by the board in General Order No. 308, which had been referred by the governor-in-council back to the board, the argument was advanced by counsel for the provincial governments that the board had taken into consideration the requirements of the Canadian National, which the governor-in-council held should not have been done.

The board in its judgment in this case stated, in part:

> There seems to be a general misunderstanding as to the real position of the board (in connection with the consideration given to the Canadian National requirements) and particularly as to the basis of the calculations on which the findings of the Board in the *Railway Rate Case* were actually arrived at. . . . It is scarcely necessary to point out that all of the calculations as set forth in that judgment, are based on the figures submitted by the Canadian Pacific Railway Company and that, as a matter of fact, that company was the only criterion by which the board could reach a conclusion as to the increase of rates which would be required to enable a properly equipped and efficiently managed railway to maintain operation on a reasonably remunerative basis.(18)

Canadian Freight Rate Increase, 1948

The Board of Transport Commissioners by order issued March 30, 1948, after extended hearings in 1947 and 1948 in ten cities in Canada, allowed the railways and express companies of Canada to increase their standard and special rates and charges generally by 21 per cent.(19)

Competitive rates which are effective between points designated by the board as competitive points on bases lower than the standard and special rates in order to meet water, motor or other competition were permitted

(11) Sections 330 — 332.
(12) Section 343.
(13) Section 344.
(14) Transport Act, 1938, 2 Geo. VI, Chap. 53, Assented to July 1, 1938.
(15) Part IV, sections 16 to 34.
(16) Part V, sections 35 to 39.
(17) Part IV, sections 24, 28 and 31, in particular.
(18) Board of Railway Commissioners for Canada, *Judgments, Orders, Regulations and Rulings*, Vo. X, No. 20, Ottawa, January, 1921, pp. 431 and 432.
(19) Board of Transport Commissioners for Canada, Order No. 70425, File Nos. 44482 and 44955.

Average Revenue In Cents Per Ton-Mile For Railroads In The United States and Canada

Year	Class I Railroads United States	All Steam Railways United States	Canadian Railways
1945	.0959	.0967	.0882
1946	.0978	.0986	.0961
1947	1.076	*	*
1947 (Oct.)	1.089	*	.0975 (d)
1948	1.264 (a)	*	
	1.322 (b)	*	1.1485 (f)
	1.380 (c)	*	
	1.292 (e)	*	

*Not yet available.
(a) On basis of interim rates authorized December 29, 1947 (17.8%) in effect throughout the entire year.
(b) On basis of interim rates authorized December 29, 1947 (17.8%) in effect for the first six (6) months of the year. with rates proposed under carriers' petition of December 3, 1947, in effect throughout the last half of the year.
(c) On basis of rates proposed under carriers' petition December 3, 1947, in effect for the full year.
(d) Last date available.
(e) Estimated on basis of third interim increases in Ex Parte No. 166.
(f) Estimated post increases effective April 18, 1948.

to be increased by amounts to be decided by the discretion of the railway or express companies. These carriers had applied to the board for permission to increase these depressed rates by as much as 30 per cent, but the proposed rates had been suspended by order of the board in 1947. (20)

The rates on coal and coke were treated separately and increases of 25 per cents per ton were allowed to be made on these commodities.

The charges for special railway freight and terminal services, with the exception of demurrage and penalty charges which were excepted from the order, were permitted to be increased by 21 per cent. These charges include those for: the transportation of milk and cream in either freight or passenger services; protective services, such as refrigeration, heating and other services rendered in connection with perishable freight; charges for collection-on-delivery services; charges for crane service; and the charges for transportation of railway equipment on its own wheels.

The minimum charge for freight service was fixed at the first class rate per 100 lb., but not less than 75 cents per shipment.

A number of rates upon movements of traffic within Canada were excepted from the order for various reasons, and no increases were permitted on these movements. For example, no increases were permitted in the rates on grain or grain products moving from points on the railway west of Fort William, Ont., Port Arthur or Armstrong. This continues the policy of the Canadian government of insuring the growers of grain in the Western Provinces low rates to enable them to reach markets in Eastern Canada and the United States in competition with producers in Central and Eastern Canada which has been followed since the Crow's Nest Pass Agreement.

For the same reason, no increases were allowed on rates on grain and grain products from all points in the Prairie Provinces—Alberta, Manitoba, Alberta, and Saskatchewan—to Vancouver, Prince Rupert and other British Columbia ports for export. Similar reasons accounted for the denial of any increases in the rates on grain and grain products for domestic consumption between points in Western Canada.

Relationships between Canadian-United States international and competitive railway export rates were similarly exempted from the order. The rates so treated include joint international rates between Canada and the United States which were increased as a result of the decisions of the Interstate Commerce Commission in its general rate cases in recent years.(21) In like manner, the rates between points in the United States passing through Canada were exempted because these rates had already been increased as a result of I.C.C. decisions. Export rates from and to points in Canada which are based on relationships of parity with rates to and from United States ports were similarly exempted from the order.

Recognized differentials between rail, water and rail-water routes were ordered to be preserved as far as practicable, without regard to the fact that certain rates via differential routes may, as a consequence, be lower or higher than would otherwise prevail, if the rates were subject to the full increases provided for in the order. The board's tariff publication regulations were waived to permit the rates to be published on less than statutory notice, not less than three days, on April 8.

Some Effects of the Increase

It is estimated that the increases will produce about $70,000,000 a year additional revenue. The annual report of the Canadian Pacific, issued before the rate increases were announced, reported peacetime operations in 1947, but net earnings from railway operations of $22,892,189 in 1947 as compared with $20,843,050 in 1946, an increase of slightly over $2,000,000. Other income of over $24,000,000 from non-railroad sources enabled the C.P.R. to earn $2.04 per share of common stock. Canadian railway spokesmen consider the rates woefully inadequate to meet increased labor and material costs.

The increases in rates in Canada are substantially less than the increases received by railroads in the United States, and less than the Canadian railways receive from through traffic between the United States and Canada.

A rough estimate indicates that the average revenue of Class I railroads of the United States would be 1.38 cents per ton-mile if the rate increases sought by them in Ex Parte 166 were authorized *in toto*, while the Canadian freight rates with the present increase would average roughly 1.15 cents per ton-mile, or 20 per cent less than the average revenue per ton-mile for freight service in Canada than in the United States. In 1945 the Canadian rates produced an average revenue of 8.82 mills per ton-mile, while the average rate in the United States were 9.59 mills, a difference of less than 9 per cent between the United States and Canada rate levels.

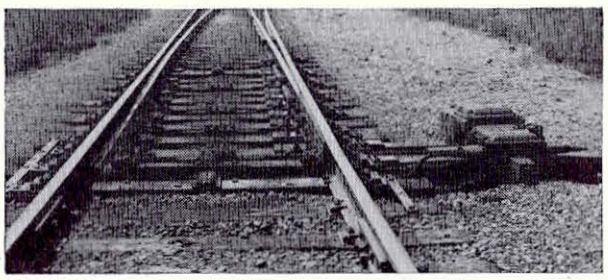
Although accurate comparisons between rate levels in the United States and Canada are difficult, if not impossible, because of differences in currency, in the purchasing power of the moneys in the countries, in the composition of traffic with respect to distance of haul, relative amounts of different commodities, and other factors, the figures in the table serve to indicate a substantial and increasing difference in the rate levels in the United States and Canada.

(20) Order No. 69612, October 17, 1947.

(21) Interstate Commerce Commission, Orders in Ex Parte Nos. 148, 162 and 166.

Typical two-head color-light station-entering signal at the end of one of the power sidings

C.T.C. SLASHES C.&E.I. RUNNING TIME



Typical power switch layout in C.T.C. territory

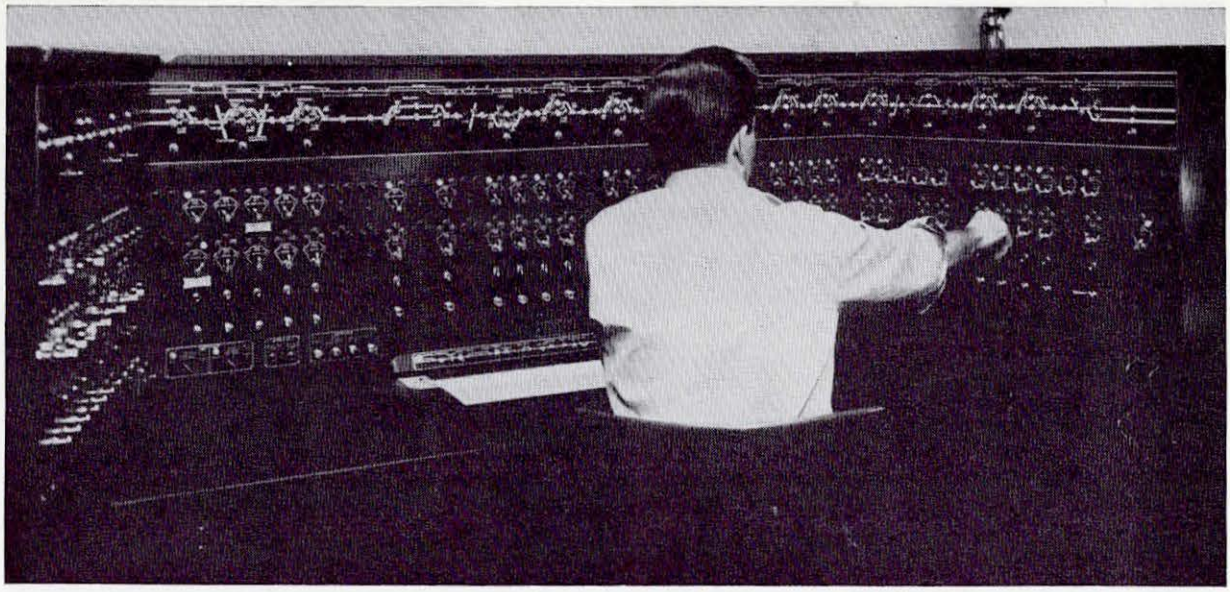
Congestion on 287-mi. route between Chicago and Evansville, Ind., relieved by new signaling on 122-mi. single-track bottleneck

A reduction of about 1 hr. 40 min. in the average running time of through freight trains is but one of the benefits of a recent installation of centralized traffic control on 122 mi. of single track of the Chicago & Eastern Illinois, between Clinton, Ind., and Evansville. Other benefits include improvements in the schedules of passenger trains, savings in operating expenses, and an increase in track capacity. This entire 122 mi. is controlled by one machine which is located in the dispatcher's office at Danville, Ill., 40 mi. north of the north end of the C.T.C. territory. By means of the indication lamps on this machine, the dispatcher watches the progress of trains, and he controls the switches and signals to authorize trains to meet on close time.

Trains Are Bunched

From Chicago, the main line of the C.&E.I. extends south, practically in a straight line to Danville, Terre Haute, Vincennes and Evansville, 287 mi., traversing rolling terrain, with light grades and curvature. The railroad parallels the Illinois-Indiana border for practically the entire distance, following closely the banks of the Wabash river from Danville to Vincennes. Double track is in service on the 163 mi. from Chicago to Clinton, and single track on the remaining 124 mi. to Evansville. All grades are under 1 per cent and curvature is generally less than 2 deg., with only a few curves of 3 and 4 deg. The tonnage ratings northward are 3,000 tons from Evansville to Vincennes, 3,200 tons from Vincennes to Seifert, and 4,200 tons from Seifert to Clinton. The tonnage ratings southward are 4,200 tons from Clinton to Terre Haute, and 3,000 tons from Terre Haute to Evansville.

The traffic in the territory south of Clinton normally averages about 40 trains daily. Trains are bunched at times during the day, particularly between Clinton and Terre Haute, and between Vincennes and Evansville, and to have 8 or 9 trains within a distance of 50 mi. is not uncommon. The territory is especially busy between 4:00 and 9:00 p.m. and between 11:00 and 3:00 a.m., when numerous passenger trains are on the line. There is an average of 17 passenger trains daily, most of which provide through service between Chicago and Florida and other points in the south, via the Louisville & Nashville at Evansville. Freight movements over this territory are predominantly north, the C.&E.I. handling a considerable tonnage from the Louisville & Nashville for delivery in Chicago, much



The control machine and dispatcher at division headquarters in Danville, Ill.

of which consists of perishables. In addition to this traffic, the Pennsylvania operates about 12 trains daily over the C.&E.I. between Dewey and Otter Creek Jct., 1.7 mi.

Approximately 35 per cent of the C.&E.I.'s freight business is coal, much of which originates between Clinton and Evansville. Consequently, there are numerous spurs and sidings leading to coal mines. Local freight trains, which do considerable switching at these mines, interfered with the through trains prior to the installation of C.T.C. Thus, the primary purpose of this installation was to relieve the congestion caused by these conditions and by the bunching of passenger trains. Train movements were formerly authorized by timetable and train orders, with automatic block protection.

Many Non-Stop Meets

The saving in train time with this centralized traffic control is accomplished by making close meets practicable because the lamps on the dispatcher's machine indicate the locations of trains. If one train is not making the progress expected, the dispatcher can advance the opposing one so that the meet is made with a minimum loss of time to both. In numerous instances, the meets are so close that neither train stops. For example, on March 16, southbound passenger train No. 95 arrived at the north end of Carlisle at 3:03 a.m., taking the siding; northbound passenger train No. 94 arrived at the south end of Carlisle at 3:02 a.m.; the two trains passed each other at 3:05 a.m.; No. 95 cleared the south end at 3:06 a.m.; and No. 94 cleared the north end also at 3:06 a.m.; thus making a non-stop meet. Under train-order operation, No. 95 would have stopped at either Sullivan, Oaktown or Smith, thrown the switch, entered the siding and waited for No. 94, thus losing from 10 to 15 min. or more.

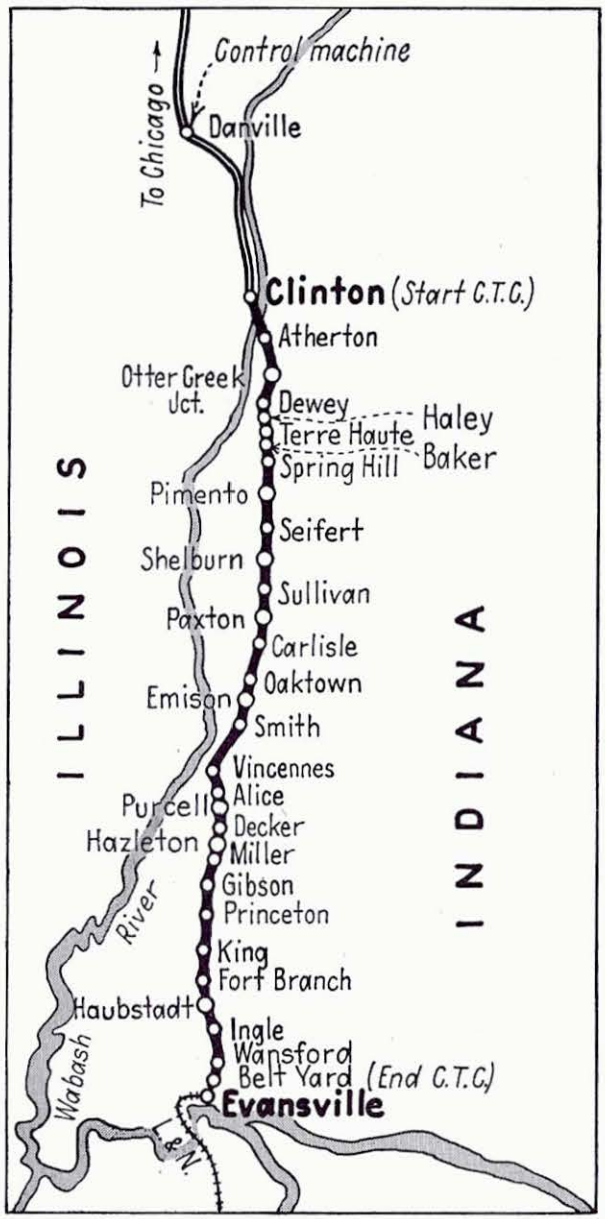
Another example of a non-stop meet, involving southbound passenger train No. 97 and northbound passenger train No. 96, occurred at Oaktown on the same date. Train No. 97 arrived at the north end of the siding at 12:30 a.m., taking the siding; train No. 96 arrived at the south end at the same time; the trains passed each other at 12:31 a.m., No. 97 clearing the south end and No. 96 clearing the north end simultaneously at 12:32 a.m. With train orders, No. 97 would probably have been held at Carlisle for the meet, losing about 20 min.

On March 8, northbound train No. 52 arrived at the south end of Gibson at 4:10 a.m., and entered the siding. Southbound passenger train No. 95 arrived at the north end at 4:12 a.m., making a non-stop meet with the freight train. The freight cleared the north end at 4:16 a.m., and the passenger train cleared the south end at 4:14 a.m. The dispatcher, under train-order operation, probably would have held No. 52 at King for the meet, with considerable delay to that train resulting.

Passing Tracks and Signals

As part of the project, 16 sidings were equipped with power switch machines and controlled signals. Nine of these sidings were extended to increase the capacity to at least 105 cars. The sidings at Otter Creek Jct., Pimento, Shelburn, Paxton, Emison, Purcell, Hazleton and Haubstadt were discontinued as such. The sidings at Otter Creek Jct., Shelburn, Purcell, Hazleton and Haubstadt were retained for storage of cars with hand-throw switches at each end, and the other four were converted to spurs. In other words, the sidings previously were spaced an average of about four miles, as compared with a new average of six miles between power sidings.

At King, power switches were not installed at the ends of the sidings. The hand-throw stands were retained and electric locks installed. Trains in each direction, however, may be directed by signal indica-



Map of the C.T.C. territory

tion to take siding at this point. The southward and northward station-entering signals at this location are the same as at other sidings equipped with power switches, except that they have a take-siding indicator below the bottom arm. If the dispatcher wishes a train to take siding, he controls the signal to display an aspect of red-over-yellow-over-S. This is authority for the train to proceed at restricted speed to the siding switch, stop and open the switch, and enter the siding.

Prior to the installation of C.T.C., No. 10 and a few No. 12 turnouts were in service at the main-line hand-throw switches. Where power switch machines were installed, these were changed to No. 16 turnouts with 30-ft. points, these layouts being signaled for 15 m.p.h. diverging movements. The 72 main-line hand-throw switches were equipped with electric locks. The power switch machines are the dual-control type and the signals are the color-light type. The high station-leaving signals have a single head and the station-entering signals have two. The top head governs movements on the main line and the lower head movements from the main line to the siding. The dwarf signals on the sidings are the three-aspect type.

The control machine for the territory, located in the dispatcher's office at division headquarters in Danville, Ill., is U-shaped, and includes the conventional arrangement of switch, signal and lock levers, indication lamps, track and signal diagram and automatic train graph. There are 33 switch levers for the control of 33 switches, 37 signal levers for the control of 108 signals, and 8 lock levers for the control of 8 electric locks on hand-throw switches. The remainder of the electric locks are controlled automatically in the field.

Numerous Interlockings Involved

At Princeton, Ind., a crossing with the Southern is protected by an automatic interlocking. In Vincennes, there is one with the Pennsylvania and another with the Baltimore & Ohio. At Sullivan, an automatic interlocking protects a crossing with the Illinois Central. At Spring Hill, there are three crossings, two with the Milwaukee and one with the New York Central. One of the Milwaukee crossings and the N.Y.C. crossing are controlled from a mechanical plant maintained by the Milwaukee. The other Milwaukee crossing is protected by an electric plant, remotely controlled from the same tower.

There are two crossings in Terre Haute, one with the Pennsylvania and the other with the New York Central. The Pennsylvania crossing is protected by an electric interlocking maintained by that road, and the N.Y.C. crossing, known at Haley, is protected by an electric plant maintained by the C.&E.I. At Dewey, a crossing with the Milwaukee is protected by a mechanical plant maintained by that road. All of these interlockings, except that of the Pennsylvania in Terre Haute, are shown on the C.T.C. panel, and the control machine has levers for the C.&E.I. home signals at the plants, except the automatic plants. These signals cannot be cleared by the towermen at the crossings unless C.T.C. consent has been received, thus coordinating the functions of the C.T.C. system with the interlockings.

Because there is a congested 3.5-mi. switching area through Terre Haute, 14 mi. south of Clinton, the signals and switches between Haley and Baker are controlled from a separate machine, located in a new one-story brick building at Wabash avenue. Hand-throw switches leading from the main line to yards and various industry tracks are equipped with electric locks, except between Locust street and Crawford street, in which territory there is a 20-m.p.h. speed limit. Train movements in the entire section are governed by signal indication, the same as in the rest of the C.T.C. territory.

This C.T.C. project was installed under the supervision of V. Van Vliet and R. D. Simms, signal supervisors, under the direction of G. P. Neal, superintendent signals and telegraph, with W. N. Donahue, signal inspector, assisting. The major items of equipment were furnished by the Union Switch & Signal Co.

FIRST QUARTER PURCHASES RISE TO $750 MILLION

Expenditures for all items, including equipment orders, up 18 per cent from 1947 three-month total—Rolling-stock buying leads increase

quipment orders totaling $95,652,000 during the month of March swelled the total of orders in the first three months of 1948 to $223,971,000, an increase of 23 per cent above orders placed in the first quarter of 1947, and helped bring total purchases for 1948's first three months, above the $¾ billion mark, an increase of 18 per cent over the equivalent period of the record year 1947. Continued buying at this rate through the rest of the year would put the total for the year at over $3 billion. All classifications in the *Railway Age* breakdown of estimates, with the exception of crossties, showed increases in their three-month totals from 1947.

In March, 1948, the total outlays for all items, including equipment, were up 10 per cent from expenditures for similar supplies during February. While purchases of rail and fuel showed slight decreases, crossties and other material more than made up for their slump. Particularly noticeable is the sharp increase in outlays for crossties, which jumped 37 per cent from the February figure.

The estimated total for equipment orders during March included $53,710,000 for 13,427 freight cars and $41,942,000 for 237 Diesel-electric and 22 steam locomotives.

1948 RAILWAY PURCHASES*

	March (000)	3 Month Totals 1948 (000)	3 Month Totals 1947 (000)
Equipment**	$ 95,652	$223,971	$181,788
Rail	7,681	23,249	21,532
Crossties	6,045	15,815	22,549
Other Material	105,438	283,120	243,027
Total from Manufacturers	$214,816	$546,155	$468,896
Fuel	68,233	210,346	173,792
Grand Total	$283,049	$756,501	$642,688

*Subject to revision
**Amount placed on order

MARCH* PURCHASES OF MANUFACTURED GOODS (Excl. Equip. & Fuel)

March '48 Compared to Other Marches (000)

Year	Amt.	% Change
1942	$80,969	+47
1943	68,110	+75
1944	90,103	+32
1945	84,862	+40
1946	75,512	+58
1947	100,398	+19
1948	119,164	

March '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$ 97,962	+22
Apr. '47	110,847	+ 8
July '47	105,869	+13
Oct. '47	105,845	+13
Jan. '48	102,583	+16
Feb. '48	100,437	+19
Mar. '48	119,164	

Three Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$229,674	+40
1943	183,235	+76
1944	247,040	+30
1945	237,472	+36
1946	213,636	+51
1947	287,108	+12
1948	322,184	

MARCH* PURCHASES OF RAIL

March '48 Compared to Other Marches (000)

Year	Amt.	% Change
1942	$3,766	+104
1943	3,718	+ 63
1944	7,700	——
1945	6,532	+ 18
1946	3,250	+136
1947	6,779	+ 13
1948	7,681	

March '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$7,723	— 1
Apr. '47	6,767	+14
July '47	8,024	— 4
Oct. '47	8,187	— 6
Jan. '48	7,327	+ 5
Feb. '48	8,241	— 7
Mar. '48	7,681	

Three Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$10,650	+118
1943	13,869	+ 68
1944	20,387	+ 14
1945	18,227	+ 28
1946	9,181	+153
1947	21,532	+ 8
1948	23,249	

MARCH* PURCHASES OF CROSSTIES

March '48 Compared to Other Marches (000)

Year	Amt.	% Change
1942	$6,100	— 1
1943	6,481	— 7
1944	7,370	—18
1945	5,540	+ 9
1946	7,987	—24
1947	8,198	—26
1948	6,045	

*Subject to revision

March '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$7,421	—19
Apr. '47	9,117	—34
July '47	8,535	—29
Oct. '47	7,148	—15
Jan. '48	5,364	+13
Feb. '48	4,406	+37
Mar. '48	6,045	

Three Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$15,785	—
1943	15,048	+ 5
1944	20,940	—24
1945	16,600	— 5
1946	19,931	—21
1947	22,549	—30
1948	15,815	

MARCH* PURCHASES OF OTHER MATERIAL

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)			Three Month Totals '48 and Other Years (000)		
Year	Amt.	% Change	Month	Amt.	% Change	Year	Amt.	% Change
1942	$71,103	+48	Jan. '47	$82,818	+27	1942	$203,239	+39
1943	56,911	+85	Apr. '47	94,963	+11	1943	154,318	+83
1944	75,033	+40	July '47	89,310	+18	1944	205,713	+38
1945	72,791	+45	Oct. '47	90,510	+16	1945	202,645	+40
1946	64,275	+64	Jan. '48	89,892	+17	1946	184,524	+53
1947	85,421	+23	Feb. '48	87,790	+20	1947	243,027	+16
1948	105,438		Mar. '48	105,438		1948	283,120	

MARCH* PURCHASES OF FUEL

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)			Three Month Totals '48 and Other Years (000)		
Year	Amt.	% Change	Month	Amt.	% Change	Year	Amt.	% Change
1942	$34,025	+100	Jan. '47	$59,602	+14	1942	$ 98,867	+113
1943	49,297	+ 38	Apr. '47	52,465	+30	1943	130,722	+ 61
1944	53,277	+ 28	July '47	49,404	+38	1944	153,659	+ 37
1945	48,538	+ 41	Oct. '47	61,563	+11	1945	139,713	+ 51
1946	53,881	+ 27	Jan. '48	72,404	— 6	1946	154,538	+ 36
1947	58,539	+ 17	Feb. '48	69,709	— 2	1947	173,792	+ 21
1948	68,233		Mar. '48	68,233		1948	210,346	

MARCH* TOTAL PURCHASES (Excl. Equip.)

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)			Three Month Totals '48 and Other Years (000)		
Year	Amt.	% Change	Month	Amt.	% Change	Year	Amt.	% Change
1942	$114,994	+63	Jan. '47	$157,564	+19	1942	$328,541	+62
1943	117,407	+60	Apr. '47	163,312	+15	1943	313,957	+70
1944	143,380	+31	July '47	155,273	+21	1944	400,699	+33
1945	133,400	+40	Oct. '47	167,408	+12	1945	377,185	+41
1946	129,393	+45	Jan. '48	174,987	+ 7	1946	368,174	+45
1947	158,937	+18	Feb. 48	170,146	+10	1947	460,900	+16
1948	187,397		Mar. '48	187,397		1948	532,530	

MARCH* INVENTORIES OF RAIL

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)		
Year	Amt.	% Change	Month	Amt.	% Change
1942	$23,886	+60	Jan. 1, '47	$30,192	+26
1943	20,651	+85	Apr. 1, '47	29,775	+28
1944	25,199	+51	July 1, '47	26,536	+44
1945	26,760	+42	Oct. 1, '47	28,084	+36
1946	21,892	+74	Jan. 1, '48	32,688	+17
1947	31,217	+22	Feb. 1, '48	35,774	+ 6
1948	38,116		Mar. 1, '48	38,116	

MARCH* INVENTORIES OF OTHER MATERIAL

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)		
Year	Amt.	% Change	Month	Amt.	% Change
1942	$360,946	+60	Jan. 1, '47	$476,625	+21
1943	371,835	+55	Apr. 1, '47	519,985	+11
1944	393,892	+46	July 1, '47	553,228	+ 4
1945	439,922	+31	Oct. 1, '47	558,987	+ 3
1946	435,455	+32	Jan. 1, '48	560,711	+ 3
1947	498,159	+16	Feb. 1, '48	570,560	+ 1
1948	576,054		Mar. 1, '48	576,054	

MARCH* INVENTORIES OF FUEL

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)		
Year	Amt.	% Change	Month	Amt.	% Change
1942	$40,198	+52	Jan. 1, '47	$49,873	+23
1943	45,374	+35	Apr. 1, '47	51,207	+19
1944	49,749	+23	July 1, '47	56,565	+ 8
1945	52,237	+17	Oct. 1, '47	56,629	+ 8
1946	61,588	— 1	Jan. 1, '48	66,606	— 8
1947	52,233	+17	Feb. 1, '48	66,671	— 8
1948	61,156		Mar. 1, '48	61,156	

*Subject to revision

MARCH* INVENTORIES OF CROSSTIES

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)		
Year	Amt.	% Change	Month	Amt.	% Change
1942	$64,290	+58	Jan. 1, '47	$83,891	+21
1943	58,999	+72	Apr. 1, '47	97,549	+ 4
1944	76,254	+33	July 1, '47	88,686	+15
1945	78,090	+30	Oct. 1, '47	87,829	+10
1946	76,253	+33	Jan. 1, '48	92,235	+10
1947	92,861	+ 9	Feb. 1, '48	93,433	+ 9
1948	101,623		Mar. 1, '48	101,623	

MARCH* INVENTORIES OF SCRAP

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)		
Year	Amt.	% Change	Month	Amt.	% Change
1942	$10,489	+70	Jan. 1, '47	$12,572	+42
1943	10,385	+71	Apr. 1, '47	11,222	+59
1944	9,925	+79	July 1, '47	9,239	+93
1945	14,093	+26	Oct. 1, '47	10,426	+71
1946	11,542	+54	Jan. 1, '48	13,300	+34
1947	17,017	+ 5	Feb. 1, '48	13,438	+32
1948	17,794		Mar. 1, '48	17,794	

MARCH* TOTAL INVENTORIES

March '48 Compared to Other Marches (000)			March '48 Compared to Other Months '47 and '48 (000)		
Year	Amt.	% Change	Month	Amt.	% Change
1942	$499,809	+59	Jan. 1, '47	$653,153	+22
1943	507,244	+57	Apr. 1, '47	709,738	+12
1944	555,019	+43	July 1, '47	734,254	+ 8
1945	611,102	+30	Oct. 1, '47	741,955	+ 7
1946	506,730	+31	Jan. 1, '48	765,540	+ 4
1947	691,487	+15	Feb. 1, '48	779,876	+ 2
1948	794,743		Mar. 1, '48	794,743	

STEELMAN AGAIN FAILS TO SETTLE OP DISPUTE

New series of meetings with Presidential assistant ended on June 2 without agreement; restraining order further extended until June 11

Dr. John R. Steelman, assistant to President Truman, this week failed in a new effort to mediate the wage and rules dispute between the railroads and the three holdout operating unions whose May 11 strike threat brought government control of the carriers under Secretary of the Army Royall. The breakdown came on June 2, when the three union leaders left the White House announcing that the Presidential assistant had failed to suggest a settlement basis satisfactory to them and that they did not expect to return for further meetings. The White House announced that no further meetings were scheduled, but that Dr. Steelman might invite the parties to confer with him again if he should find what he considers "common ground" on which a settlement might be reached.

Meanwhile, Justice T. Alan Goldsborough of the United States District Court for the District of Columbia has granted a second extension, from May 29 until June 11, of the restraining order which the government obtained from him to stay the strike; and he has also postponed, from May 28 until June 10, the hearing on the government's proposal to convert the order into a permanent injunction against the three unions and their leaders.

The latter are Alvanley Johnston, grand chief engineer of the Brotherhood of Locomotive Engineers; D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen; and A. J. Glover, president of the Switchmen's Union of North America. The dispute arose over their refusal to accept the report of the emergency board (see *Railway Age* of April 3, page 47) which recommended for their members some changes in working rules and the same 15½ cents per hour wage increase accepted by unions representing other employees. Railroad management, which has agreed to accept the emergency board's rcommendations, has been represented in the Washington negotiations by chairmen of the regional carrier conference committees—D. P. Loomis, western, H. A. Enochs, eastern, and C. D. Mackay, southeastern. President William T. Faricy of the Association of American Railroads has also attended some of the White House meetings with Dr. Steelman.

Three Days of Meetings

The latest of Dr. Steelman's unsuccessful efforts to mediate the dispute got under way on May 28, when the Presidential assistant began a series of separate meetings with the parties. After a recess over the Memorial Day week-end, the meetings were resumed on June 1 and continued on the following day until the break-up came, as noted above. Prior to that time the union leaders and management representatives, acting upon the suggestion of Dr. Steelman, had held joint conferences over a period of four days from May 18 until May 21, when those negotiations broke down with both sides issuing statements setting out again their respective positions (see *Railway Age* of May 29, page 45).

The further extension of the restraining order, from May 29 until June 11, was with the consent of the unions, that being required for a second extension. The consent, which was submitted to the court by the unions' counsel, Carl McFarland, stipulated that it was given "without prejudice to the defendants' objection to the venue and jurisdiction of the court for all other purposes," such condition not to affect in any way "the validity or propriety of the temporary restraining order as extended." That language was incorporated by Justice Goldsborough in his extension order.

Meanwhile, the unions had filed a motion to dismiss the government's complaint, and Justice Goldsborough said that the motion would be deemed part of "defendants' pleadings" in response to the government's proposal to convert the restraining order into an injunction. The unions based their motion for dismissal on these contentions: (1) That the suit was brought in the wrong district, because the defendants are not residents of the District of Columbia; (2) that the court lacked jurisdiction over the subject-matter of the suit because of the anti-injunction provisions of the Norris-LaGuardia act; (3) that there was no basis for equitable relief because the Railway Labor Act governed the case exclusively and precluded the issuance of an injunction; and (4) that the complaint failed to state a claim against the defendants on which relief could be granted.

Restraining Order Assailed

The motion was accompanied by a statement which argued these contentions at some length. The argument claiming applicability of the Norris-LaGuardia act asserted that an injunction was barred by that act because the government "has not assumed the duties of an employer" with respect to railroad employees. The Supreme Court's decision upholding Justice Goldsborough's injunction against the United Mine Workers and its president, John L. Lewis, at a time when the mines were under government control, was interpreted as one which held that the Norris-LaGuardia act "prevents the United States from maintaining injunctive proceedings save where the dispute is one between the government and its own employees."

"In that case," the unions' argument continued, "not only did the statute provide for seizure in case of strikes, but, after seizure, the statute required the government to deal with the workers as its own employees and the government did so. Here the statute neither provides for seizure to prevent work stoppages because of threatened strikes nor has the government

dealt with the workers as its own employees. Hence, unlike the Mine Workers case, here there can be no labor dispute between the government and the workers. Consequently, since both seizure and suit are for the sole purpose of preventing a threatened strike between private principals, the bar of the Norris-LaGuardia act applies and precludes injunction."

The 1916 act, under which President Truman took over the railroads, was called "the alleged statutory basis for seizure" as the unions' statement went on to assert that this law (unlike the War Labor Disputes Act involved in the coal dispute) "was not enacted because of labor disturbances, but solely to permit the government to utilize the railroads for war needs in preference to civilian purposes. . . ."

With respect to the President's seizure order, the unions argued that it "does not contemplate a relationship of employer and employee between the government and the railway laborers"; it "assumues either a continuation of negotiations between the private owners and the employees or a stalemate frozen by federal 'seizure'." In this connection, the Railway Labor Executives Association last week rallied to the support of the holdout unions and adopted a resolution calling upon the government to assume "the full responsibilities of operation," which would contemplate taking "control of the revenues of the railroads as it has already taken control of the employees," and proceeding "to bargain upon wages and working conditions."

As to their refusal to accept the emergency board's report, the unions' argument in support of their motion to dismiss the government complaint pointed out to the court that the Railway Labor Act contemplates no compulsion in a matter of that kind—"beyond the cooling-off period." They added that the government case against them was an undertaking to superimpose on the Railway Labor Act "the injunction authority contained in the Taft-Hartley Act," despite the exemption from that act of labor-management disputes in the railroad field.

The argument contended further that, after Railway Labor Act procedures have run their course, relief from a railroad strike "lies with Congress and not with the courts."

Other pleadings filed with the motion were separate affidavits by Messrs. Johnston, Robertson and Glover. These set out information about the headquarters and organization of the three unions and contained additional criticism of the government's method of handling the dispute.

WHAT'S AHEAD?

(*Continued from page* 56)

of the union members opposed it. But during the past six months hostility to the bill very definitely has been declining. For example, the 54 per cent who said the bill should not have been passed has now gone down to 39 per cent, which means that the law is gradually becoming accepted. It is very interesting that whereas the law was opposed as a symbol, when we went down the line and asked people to vote on ten individual provisions of the law we found that majorities approved practically every provision.

Public Attitude Rechecked

In our latest recheck of opinion we found minor changes in the approval of specific provisions, but as many in the direction of greater favor as of disfavor. For example, strong majorities continued in favor of prohibiting the closed shop; of requiring statements from union leaders that they are not Communists; of injunctions to delay strikes in public welfare industries; of requiring a majority vote of *all* the workers before a union shop can be installed. Similarly, approval is voiced again today, as it was six months ago, for the sixty-day "cooling off" provision; for the idea that companies can sue unions if they break contracts; for the idea that the workers must consent before the check-off can be used; for the idea that the employer should have a right to speak his mind on union matters; and for the idea that labor unions should be prohibited from contributing to political parties.

Although all this is true, the interpretation which has been given to the law to forbid unions to publish political editorials in their union papers, or to buy advertising in daily papers for political purposes, is distinctly unpopular with workers. If there is some amendment to be made in the law, I am sure that will be one of the first points which will give way. Somehow, people feel that this is an interference with freedom of speech. But on most points the Taft-Hartley Act is likely to define the environment in which business will conduct its industrial relations over the next few years, and I am not sure but that it will be acknowledged finally by the union leaders as a law which has been useful to them.

New College Bureau Will Help Prepare Instruction Material

Wayne University at Detroit, Mich., has announced the establishment of an audio-visual materials consultation bureau, which stands ready to assist companies and associations in the production of all types of instruction materials. Surveys showing school needs, critical analysis of scripts and copy and actual classroom try-out of materials in "rough" or finished form are examples of the type of help given, it was stated.

The bureau will assist organizations in the preparation of films, booklets, charts or specimen products to be made available for school use in training programs. Among its other services, the bureau will prepare market analyses and distribution surveys.

In charge of the new service will be Dr. Arthur Stenius, whose experience includes intensive research study in the field and the actual production of films, records and graphic materials. He was formerly in charge of the audio-visual program for the Detroit public schools. Organizations interested in the services of the bureau should address inquiries to Dr. Stenius, 5272 Second Blvd., Detroit 1.

Communication

Constructive Suggestions for Attracting College Graduates

MILWAUKEE, WIS.

TO THE EDITOR

Reading the April 3 issue of *Railway Age*, I was most forcibly impressed by the editorial comment and article on "Why Engineering Graduates Resist Railroad Employment." I assure you that there has been such resistence, and it has prevailed here for several years at Marquette University—this, in spite of the fact that we have had cooperative relations with the Chicago, Milwaukee, St. Paul & Pacific for some time.

But there is one cogent fact which was not brought out in your editorial and article, and perhaps it is best that it was omitted. There is and has been considerable sentiment among engineering students along two lines which has been accepted as true. The first, and most common, is that railroading is a "dead issue"—that the lines are "all through" as far as needing young engineers is concerned. It has been pointed out that there will be no more construction—hence no need for civil engineers. In the second place there has become quite widespread the feeling that if young graduate engineers are to be employed by the railroads, the roads themselves prefer to teach them the elements and details of their work.

The results of this quite general feeling are obvious. On the one hand, we find our graduates looking elsewhere for jobs. The question of salary is, undoubtedly, of great importance here, but perhaps there is failure to realize that there is room for growth and advancement on the railroads, and that the appeal of railroading is not dead. May I suggest that a bit of "salesmanship" on the part of our railroads might help overcome any salary differential.

As regards the teaching of railroad subjects, assuming that some courses in railroading can be of benefit, why not so inform the schools so that we may have a real reason for continuation of suggested courses? Let the schools know that the railroads are interested in them and their graduates, and make specific suggestions as to courses, etc., which would be of value in the education of the engineer, as well as in creating an awareness of the fact that there are possibilities for employment and professional growth in the railroad field.

I believe that most of us recognize the romance of railroading. Why not capitalize on it a little more?

O. NEIL OLSON
Professor and Head, Civil Engineering Department
Marquette University

REDUCED FARES

(*Continued from page* 59)

hand, the test of the value of "Nancy Hanks II" is to be found in what it has done in the way of increasing the overall passenger revenue accruing to the Central of Georgia on all its trains operating between Savannah and Atlanta and, on this score, the new train has made a remarkable showing.

The overall earnings from Atlanta-Savannah passenger traffic are unsatisfactory statistics for comparative purposes, since they include the Chicago-Florida trains, operating over the section of this line between Atlanta and Macon, 103 mi., which distort the picture. The Savannah-Macon earnings are of considerably greater significance for the purposes of this study. In December, 1946, before the streamliner began operations and before the reduced fares were made effective, trains No. 1, 2, 3 and 4 earned $29,654 between Savannah and Macon. In December, 1947, the "Nancy Hanks II" alone earned $39,806 between Atlanta and Savannah. Since the Savannah-Macon portion represents about two-thirds of the mileage of this run, it appears that the new streamliner alone made as much money on this run in December, 1947, as all of the other four trains together earned in the same month in 1946. The summer season will show an even greater gain in overall earnings, since the "Nancy Hanks" has proved highly popular in attracting vacationists to the Georgia beaches to train travel instead of bus or private auto transportation, as was evidenced by earnings for August, 1947, of $54,432.

The revenue per train-mile of "Nancy Hanks II" from its inaguration to the end of 1947 amounted to an average of $2.31. During the same period, all expenses per train-mile, including dining car losses, averaged $1.44, leaving a net revenue per train-mile of 87 cents. Up to the end of 1947, the train handled 77,460 revenue passengers, with a normal consist of a baggage-chair car, a grill-lounge, and three chair cars. However, in the summer, and especially on week-ends, additional chair cars are frequently supplied from the pool of new streamlined cars owned by the Central.

Tied in with the Savannah-Atlanta route is improved service between Augusta and Savannah. Augusta is located north of the Savannah-Atlanta line on a 54-mi. line extending from Millen, Ga., which is maintained to secondary main line, rather than branch line, standards, since Augusta is an important gateway for freight traffic. Effective April 1, 1948, a neat, modernized train, consisting of air-conditioned equipment rebuilt in the Central's shops, was put in service replacing the equipment formerly used on steam trains operating between Augusta and Savannah. The new train is painted blue and gray—the colors of "Nancy Hanks II." When the new equipment was supplied, 11 stops were taken out of the schedule and the running time was improved accordingly. This train is known locally as the "Little Nancy."

Several advantages for Augusta passengers have accrued from the new schedule. They may now leave in the morning on the new train, make connections with "Nancy Hanks II" at Millen, and be back in Augusta the same day, after spending nearly five hours in Atlanta. Augusta is also hours nearer to such points as Albany, Ga., and Columbus, and to Birmingham, Ala. The new train, after making connections with "Nancy Hanks II" at Millen, proceeds to Savannah, connecting with the north-bound Florida-New York trains. The return schedule now permits for the first time travel from Miami to Augusta with a 9 a.m. departure from Miami and a before-midnight arrival at Augusta. This new Augusta-Atlanta and Augusta-Savannah service has the benefit of the low five-day round-trip fares.

GENERAL NEWS

C. & O. Thinks It Can Start Pay Guarantee

Young so advises labor leaders, asking them to join the F.R.P.

Speaking at a meeting of the Railway Labor Executives' Association in Washington, D. C., on May 27, Robert R. Young, chairman of the Chesapeake & Ohio, said that road believes it can "safely" establish a guaranteed annual wage for "at least some" of its employees. Mr. Young, who is also chairman of the Federation for Railway Progress, made much of his address an appeal for labor membership in the federation.

He assigned to labor leaders an important role in current labor-management relations, saying that "some way must be found to protect the position of the leaders, not for their sake but for labor's sake." The C.& O. chairman does not agree with "some in industry" who argue "that it is hopeless to work with the unions, because the leaders are interested first in themselves and second in their men—and that they will cooperate in nothing that tends to lessen their hold over either their men or our economy."

Praise for John L. Lewis

Mr. Young, as he put it, does not believe this "for a minute." He believes that his "much maligned friend," President John L. Lewis of the United Mine Workers, could earn "10 times what he is presently earning" and that he could earn it "a lot more easily" in any other line of endeavor. The C.& O. chairman then added an expression of his wish that there were men of Mr. Lewis' "ability" and of the "ability" and "humanity" of the railway labor leaders to whom he was speaking "on the management side, or in key places in government."

The revelation of the C.& O.'s belief that it can make a start on a guaranteed-annual wage plan came in Mr. Young's discussion of the "security" to which he believes labor is entitled. He deplored what he called the trading of freedom "in return for what is alleged to be security," asking at the same time how there can "justifiably ever be unemployment in a world where there is so much to do and see." In his own thinking, Mr. Young said he has "put unemployment down as a thing in this country that is no longer politically possible."

"If business lacks the ingenuity to keep men working at a living wage," he continued, "our politicians will do it for them at business' expense, or even at the expense of war. That is at least one reason why I am for the guaranteed annual wage—it is cheaper for business to thus keep men at work productively than it is through taxes to support them in idleness or made work, or in mutual murder and destruction.

"Sniping" Stockholders a "Danger"

"This is another place where we need your advice and help. How can C.& O., for example, help you further the vital principle of the annual wage when we are already beset by banker-inspired minority stockholders who are sniping at us because of our progressive policies. Simultaneously and universally adopted, the annual wage would insure the profits of every business, endanger no one's. For the pioneer, however, in a business subject to the wide swings of the railroads, the adoption of the annual wage for all employees by a single railroad might well be suicidal—causing as it would otherwise avoidable operating losses. Such a failure, precipitating a security-holder revolt against the guarantee, could be used by the reactionaries to set the principle back for a generation. This danger, however, has not deterred C.& O. We believe that, even without any degree of similar stabilization in other companies, we can safely establish a guaranteed annual wage for at least some of our employees. That done, with your help, and with the help of the federation, who knows how far, even how fast, we may go."

Meanwhile, the C.& O. chairman had told the labor leaders that he had been on a "swing across the country," during which he had spoken "to outstanding groups in San Francisco, Detroit and Chicago." He told these groups, as he put it, of the decay that has taken place in the railroad industry, lack of research, banker-management, non-competitive agreements, inadequate rates, and failure to maintain quantity and quality of railroad equipment and service"; and "how that failure was adding unhealthy stimulus to the competition from the highway and airway."

Mr. Young's bill of particulars specified "how the Interstate Commerce Commission through their subservience to the banking monopoly had blocked our efforts to buy 6,000 Pullman room cars to be leased to the railroads at exactly the same price that present equipment is leased"; and how the commission "blocked our consolidation with New York Central where we had hoped through the injection of good and progressive top management to revitalize the whole industry, and thus add to the security of labor." The C.& O. chairman also reported to the labor leaders that he had told his previous audiences "something of our new train 'X' which should revolutionize passenger travel, add many more train crews to the rails, and overcome the half billion dollars loss the railroads are suffering each year in the passenger business."

Wants Brothers in F. R. P.

It was "readily apparent from the reaction of these audiences," he added, that "the public is wholeheartedly with the federation and the C.& O. in its programs in these directions." Noting that F.R.P. has no members representing railroad employees, Mr. Young proceeded to say it seemed to him "important that labor be represented in the federation because labor, as much as the railroads, faces certain dangers that can only be averted by the cooperation of all of us in some such democratic organization as we have set up."

The F.R.P. chairman disclaimed authority to speak "for the policy of the federation toward specific phases of management-labor relations." Such matters "can only be determined by the federation's council in its formal deliberations," Mr. Young explained, adding an expression of his hope that such deliberations would soon be with the "membership and advice" of the railway labor leaders. However, he did outline briefly what he thought the federation's "guiding philosophy" should be. He put first the proposition that "wages as well as happiness come out of production, and that, with a fair division, all of us would like to see productivity increase within the limits of human welfare."

Mr. Young asserted that there are things "jealously cherished by labor" which he would like to see changed—"just as there are others deemed vital by management that I would also change." He called for a breaking of the "chains of monopoly" to aid in the establishment of a higher standard of living which would include more leisure.

He assured the labor leaders that he is "for all that the traffic will bear" in the way of "high wages, reduced hours, and vacations with pay."

"Management," Mr. Young added, "cannot fairly expect to eliminate inefficiency, to get as much out of a man in six hours as we now get in eight, unless that man benefits accordingly in intangibles as well as in material things. Certainly we cannot expect a man to do in six hours what now takes

him eight if by so doing he works himself out of a job—a living."

Fears More Inflation

This brought the C.& O. chairman to his discussion of "security" and the guaranteed annual wage, as noted above. His third and final proposition, also mentioned above, was that calling for protection of the position of the labor leader. In the latter connection, Mr. Young made this additional comment:

"That is why the federation is so anxious for immediately better labor-management relations. Such labor-management cooperation would make the labor leader's job more important rather than minimize it. I think I can sense the temper of those now in the ascendency in government. . . . When these men read the time as being in their favor they will strike, and the blow may be such as to wipe out the hard won gains of labor through many decades.

"As they ship our resources out of the country in ill-considered deals in peace . . . when we waste our assets in war, we are forcing up the cost of living. Now, you and I know, that as ready, willing and anxious as these men have always been to waste the product of our labors in one way or another overseas, never have they gracefully recognized the right of labor to a corresponding cost of living adjustment in wages. Only you men through your great loyalties and energies have prevented labor, and even business in its selfish obtuseness, from being ground between the millstones of rising costs and declining volume.

"Now the time will come, as these dissipations go on, that our government debt will be inflated to the bursting point, and when currency, hence wages, will drastically decline in value. Then it may really be that the increasing cost of living cannot be met by increased wages. It is then that the yoke will fall on labor's neck. The labor leaders will be emasculated, and statism or Fascism under the banking group will be in full sway."

Agree on Retirement and Jobless Tax Bill

Managements and unions in pension-tax cut compromise

Legislation designed to amend both the Railroad Retirement Act and the Railroad Unemployment Insurance Act, and which has the approval of the railroads, railway labor and the Railroad Retirement Board, was reported favorably to the House from its committee on interstate and foreign commerce on June 2, the day on which the committee had a hearing on the bill. The measure is H.R. 6766, introduced June 1 by Representative Wolverton, Republican of New Jersey, and chairman of the committee.

Identical bills also have been introduced in the House by Representative Crosser, Democrat of Ohio, and in the Senate by Senator Taft, Republican of Ohio, on behalf of himself and Senator Ives, Republican of New York. They are H.R. 6768 and S. 2782, respectively. The latter has been referred to the Senate committee on labor and public welfare, of which Senator Taft is chairman.

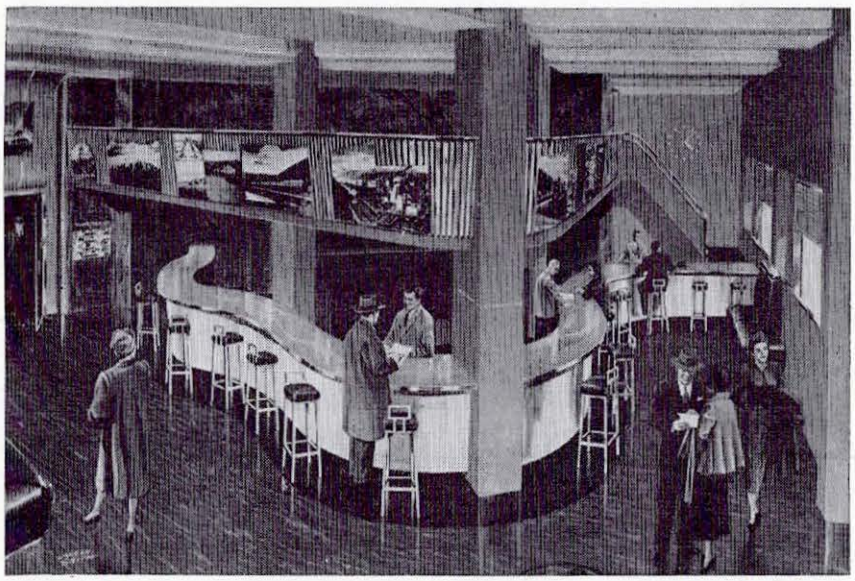
The bill would amend the Unemployment Act by placing the taxes collected on a sliding scale basis which would reduce the levy (paid entirely by the railroads) from 3 per cent to ½ per cent of the taxable payroll, to apply retroactively to January 1. It also proposes to amend the Retirement Act by granting to former railroad employees who are presently retired and to railroad employees who will retire in the future an increase of 20 per cent in their annuities. The Retirement Act also would be amended by the restoration of the provision for lump-sum death benefit payments that was in effect before the so-called Crosser Act was enacted in 1946.

According to Mr. Wolverton, the proposed legislation, which he hopes will reach the House floor no later than June 7, is the "product of an agreement" between labor and management in the railroad industry. "The 80th Congress during the past year and a half has been confronted with a great many proposals, both by labor and management, for amending the . . . Retirement Act . . . and the . . . Insurance Act," he commented in part. "The proposals of labor were opposed by management and those of management met with opposition from labor. As our committee studied these various proposals, we found it increasingly difficult to get proper statistics as the figures on both sides differed greatly.

"While the committee was struggling . . . to arrive at a solution to the problem, conferences were held between labor and management . . . in the hope that the views of both sides might be reconciled, and I am happy to state . . . that both labor and management have agreed upon the bill which I have introduced, and once again, both sides are to be congratulated upon being able to sit down and settle their differences over the conference table." At the time, he added that the success of the basic railroad retirement system is the result of agreements between management and labor.

Testifying in support of the measure, J. Carter Fort, vice president and general counsel of the Association of American Railroads, told the committee that the agreement between the A.A.R. and the Railway Labor Executives' Association with respect to the bill was a "give and take" affair. The agreement, he said, did not reflect the views of either management or labor, but instead reflected a compromise reached by the parties "in a sincere effort to compose their differences." Mr. Fort said that the railroads would not favor "some of the provisions" of the bill unless they were coupled with other provisions. "This is also true, I believe, of the R.L.E.A.," he added.

According to Mr. Fort, the Railroad Unemployment Insurance Account amounted to $934,000,000 as of March 31, a figure which he described as being "so large that it has lost all relationship to any conceivable need." "The



The Baltimore & Ohio opened a new ticket and travel office at H street and Connecticut avenue, N. W. Washington, D. C., on June 1. The new office, in which recorded music will be played, faces toward the White House grounds and has a private driveway to facilitate the delivery of tickets for patrons calling for them in automobiles. There is a special travel bureau for women.

graduated tax scale," he added, "would give the railroads a certain amount of credit as to future taxes for the excessive taxes paid in the past until such time as the reserve account should be reduced to a reasonable level, and then would measure the taxes by the actual needs and requirements as developed by experience."

Under the provisions of the bill, the unemployment-insurance tax would remain at ½ per cent of taxable payroll so long as the balance in the Railroad Unemployment Insurance Account in the Treasury remained at $450,000,000 or more. When the balance dropped below that figure but remained above $400,000,000, the tax would become 1 per cent, and so on until the 3 per cent rate would be restored when the fund fell below $250,000,000. The sliding-scale tax plan in previous bills, which the railroads have favored, would have cut the tax to ½ per cent and left it there until the fund dropped below $350,000,000; and would not have restored the 3 per cent levy until the fund fell below $150,000,00.

L. P. Schoene, counsel for the R.L.E.A., said that while labor favors higher retirement benefits, the proposed legislation 'goes as far in increasing benefits as would appear prudent to go." The proposed graduated tax scale, he told the committee, is now set up so as to provide proper safeguards for the reserve fund in the unemployment insurance account.

Mr. Schoene also indicated that R.L.E.A. would have preferred H.R. 5993, an earlier Crosser bill, which would also have raised the Retirement Act benefits by 2 per cent, while leaving the Unemployment Insurance Act unchanged. That bill and numerous others which had been referred to the committee, originally were scheduled for hearing on June 2, but were set aside at the request of their sponsors in order to consider the labor-management "compromise" which is embodied in H.R. 6766.

Floods in Pacific Northwest Disrupt Railroad Service

Floods which this week struck the Pacific Northwest—including Oregon, Washington and British Columbia in Canada—caused widespread disruption in the service of the Canadian National, the Canadian Pacific, the Great Northern, the Southern Pacific, the Union Pacific and the Spokane, Portland & Seattle.

The S.P.&S. reported that 700-ft. of double track mainline fill was washed out at North Portland Junction. This line is normally used by the N.P., the U.P., the G.N. and the S.P.&S. between Vancouver, Wash., and Portland, Ore. The road expects to complete the installation of a 45 bent single track pile trestle for temporary operation by June 7.

Transcontinental operations of the C.P. and C.N. were halted by the flooding Fraser and smaller rivers in British Columbia, isolating Vancouver from eastern Canada. The C.N. stopped the sale of tickets to stations west of Blue River, B. C., and Red Pass and the C.P. halted rail service west of Calgary, Alta. Passengers already en route to points farther west when this action was taken were flown to their destinations in airplanes operated by the roads' air subsidiaries.

Registration of Lobbyists

The May 5 issue of the Congressional Record lists registrations received during the first quarter of 1948 by the clerk of the House of Representatives and secretary of the Senate under provisions of the Registration of Lobbying Act. The list includes the registrations of officers of the Federation for Railway Progress, which were reported in the *Railway Age* of March 13, page 90. The report filed with the clerk of the House by the Association of American Railroads was noted in the issue of April 17.

Other registrants on the list included:

B. E. Bowden, American Train Dispatchers Association.

George N. Byrum, Brotherhood of Locomotive Firemen and Enginemen.

James L. Cosgrove, Railroad Employees' National Pension Association, Inc.

M. J. Galvin, Great Northern, Northern Pacific, Chicago, Milwaukee, St. Paul & Pacific, Chicago & North Western, Chicago, Minneapolis, St. Paul & Sault Ste. Marie, Minneapolis & St. Louis, Duluth, Missabe & Iron Range, Chicago, Burlington & Quincy, Chicago Great Western, Illinois Central, Chicago, Rock Island & Pacific, and Canadian Pacific.

Oscar W. Holste, Brotherhood of Railway and Steamship Clerks.

J. M. Hood, American Short Line Railroad Association.

T. L. Jones, Brotherhood of Maintenance of Way Employees.

George A. Kern, Iowa Railway Committee.

Raymond E. Marks, Southern Pacific, Union Pacific, and Western Pacific.

F. N. Melius, Jr., Universal Carloading & Distributing Co.

Harold M. Miles, Southern Pacific.

Gerald Orndorff, Brotherhood of Railroad Signalmen of America.

Henry P. Schmidt, Brotherhood of Railway and Steamship Clerks.

James D. Snyder, Illinois Legislative Committee, representing all Class I Illinois railroads.

J. W. Weingarten, Chicago, Burlington & Quincy.

Clarence P. Wilson, Brotherhood of Locomotive Firemen and Enginemen.

New M.R.S. Headquarters Enters Reserve Corps at Chicago

The First Transportation Military Railway Service Headquarters was formally accepted into the Organized Reserve Corps on May 21, at a dinner and ceremony in Chicago attended by 24 reserve and regular army officers and J. H. Aydelott, vice-president, Operations and Maintenance department, of the Association of American Railroads. The unit is being sponsored by the A.A.R. and will be commanded by Colonel E. E. Foulks, superintendent of transportation of the Atchison, Topeka & Santa Fe, at Chicago. The personnel of the headquarters will consist of 46 officers already selected and approximately 164 enlisted men.

Officers for the unit were chosen by the A.A.R. and approved by the chief of transportation. The headquarters for the Second and Fourth Transportation M.R.S. Headquarters—also to be sponsored by the A.A.R.—will be at New York and Washington, D. C., respectively, upon their re-activation as reserve units sometime in the future. The Third Headquarters is on active duty in Japan.

Illinois Central Fined $10,000

The Interstate Commerce Commission has been advised that judgment in the amount of $10,000 and costs was entered against the Illinois Central in the federal district court at Waterloo, Iowa, on May 11. According to the commission's notice, the I.C.C. paid pick-up allowances on livestock at Dubuque during a period of time when its tariffs did not offer pick-up services with vehicles operated by or for it.

Northern Pacific Fined $1,000

The Interstate Commerce Commission has been advised that judgment in the amount of $1,000 and costs has been entered against the Northern Pacific in the federal district court at Minneapolis, Minn. The judgment, according to the commission's notice, was the result of a complaint which charged the N.P. with having failed to observe the provisions of a commission service order in furnishing freight cars to shippers for loading grain at Minneapolis.

Advocates Dissolving R.E.A. To Improve L.C.L. Handling

Eventual dissolution of the Railway Express Agency and absorption of its personnel and facilities by the Post Office Department, the railroads and forwarding companies was advocated by Carleton W. Meyer, assistant to the president of the Chesapeake & Ohio, in an address at a May 26 luncheon meeting of the Traffic Club of New York. Mr. Meyer said he regarded this step as one of those necessary for the business-like handling of head-end railroad traffic. (Robert R. Young, in his capacity as chairman of the Federation for Railway Progress, recently proposed the establishment of a pick-up service by the parcel post section of the Post Office Department to take over the handling of small freight shipments from the R.E.A. This was recommended by Mr. Young as a logical first step toward ultimate elimination of the Express Agency. See *Railway Age* of May 15, page 208).

"The most acute part of the rail merchandise traffic problem," Mr. Meyer continued, "is the handling of merchandise traffic at the head-end of passenger trains. Returns to the railroads from

express transportation have become increasingly unsatisfactory. Fast freight service, by railroad and by highway, has become so good that many of the large and profitable shipments formerly handled by express now go into freight service. Parcel post, with its cheaper rates, has tended to attract the more easily handled smaller shipments, leaving fragile, perishable and dangerous articles to the Express Agency. The result is that the Express Agency is left with a type of traffic which does not provide enough revenue to pay the cost of handling and pay the railroads anything like a fair price for the service of transportation."

Handling of l.c.l. freight has long been duplicated and highly competitive, Mr. Meyer went on, with railroads, trucks and air lines participating in handling the transportation of small freight. Rising costs have caused severe pain for all transportation agencies engaged in the small shipment business, and to meet that situation most railroads are evolving a pattern for improving l.c.l. services. Some have set up key points for concentration and distribution of small freight, using trucks for short-haul operations, which has speeded up train service.

To improve methods of handling l.c.l. freight, parcel post and express, Mr. Meyer specifically proposed that: (1) The Post Office Department occupy the whole field of transporting by rail small shipments that fall within the present parcel post limits of 70 lb. and 100 in. in length and girth; (2) Congress should authorize the Post Office to set up a compensatory schedule of rates, so parcel post service will at least break even and not add to the postal deficit; (3) an optional pick-up service should be made available to parcel post patrons where practicable, with the patron to be charged for the extra service; (4) the R.E.A. should be dissolved and its personnel and facilities absorbed; (5) railroads should continue to expand and develop l.c.l. freight service on schedules approximating express speeds; and (6) certain railroads, serving routes of high traffic density, might find it profitable to establish ultra high speed express services, approaching the speeds of modern passenger trains.

The C. & O. officer said he visualized the possibility of solid express trains on overnight schedules for distances up to 1,000 miles or more and on transcontinental schedules of about 60 hours.

"Railroad managements are energetically attacking expenses, as part of a job of showing satisfactory net," Mr. Meyer stated. "Good management, careful planning of activities, and avoidance of lost motion, will help to save money. But they can save only so much. To go further, to go where we need to go if we are to lick the problem, we need a new technology. The railroads need locomotives that burn less fuel and cheaper fuel; that will run longer mileages and cost less to maintain. If the first cost of locomotives can be reduced, so much the better. We need freight cars that are more serviceable, that cost less to build and less to maintain. There is urgent need for a drastic cut in the first cost of new passenger equipment, which has become exceedingly expensive. Through mechanization and other improvements, we must cut down the cost of terminal services, such as the handling of l.c.l. freight.

"All through our railroad operations, we need better tools and better methods. The only answer to wage increases is to raise the productivity of labor and thus enable labor to *earn* its sharply increased wages. We need better labor-management relations, because satisfaction on the job is a large factor in the productivity of labor. Job satisfaction is also a large factor in the success of our whole private enterprise system—one that has not received the study it deserves."

New York Railroad Club Offers Prizes for Railroad Essays

The executive committee of the New York Railroad Club, at its meeting on April 15, authorized the expenditure of funds to finance a prize competition for the best papers relating to the improvement and efficiency of railroad administration and operation.

The competition is open to men not more than 35 years of age, whether they are in or out of the railroad field, and regardless of membership in the club. A first prize of $750 will be paid for the best article, $500 for the next best, and $250 as the third prize. The articles must be in the office of the executive secretary of the New York Railroad Club, 30 Church Street, New York, on or before February 1, 1949.

They will be judged on the basis of originality of material, constructiveness of thought and adequacy of presentation. They should contain not less than 2,500 words and may be as much longer as necessary to cover the subject properly. They may be accompanied by drawings or photographs to make the meaning clearer.

The only limitation is that the subject discussed must concern railroading and be constructive. The following topics are suggested, but the contestants are not restricted to them:

Opportunities for the railroads to improve their public relations.

Opportunities for the railroads to improve their employee relations.

How to achieve a more economical yard operation.

What should be done to improve freight station operations.

Importance of improving man-hour productivity on track maintenance.

Improvements in freight car design which will better availability and reduce maintenance.

Improvements in railroad motive power which will better availability and reduce maintenance.

Suggestions for the better utilization of motive power or equipment.

Operating economy by modern signal and communication methods.

While not specifically mentioned in the above suggestions, subjects such as safety, selection and training of employees, traffic and accounting practices, and other factors concerned with railroading will, of course, be acceptable.

Additional information will be furnished by David W. Pye, executive secretary, New York Railroad Club, 30 Church street, New York 7, N. Y.

April Employment

Railroad employment decreased 4.35 per cent—from 1,317,026 to 1,259,723—during the one-month period from mid-March to mid-April, and the mid-April total was 6.40 per cent below that of April, 1947, according to the preliminary summary prepared by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. The index number, based on the 1935-1939 average, was 125.4 for April, as compared with 132.3 for March and 134 for April, 1947.

April employment was above that of April, 1947, in only one category, the increase being 2.27 per cent in the executives, officials and staff assistants group. The decreases, meanwhile, ranged from 3.38 per cent in the maintenance of way and structures category to 9.88 per cent in maintenance of equipment and stores.

As compared with March, employment in April also increased in only one group—maintenance of way and structures—in which the rise was 1.31 per cent. The decreases ranged from 0.16 per cent in the executives, officials and staff assistants group to 9.41 per cent in maintenance of equipment and stores.

Roads Supply Enough Scrap For Their Steel Requirements

Railroads turned back to the iron and steel industry more than a ton of scrap metal for every two tons of iron and steel they bought during the past four years, according to the Association of American Railroad. This amount of scrap, the statement added, "is enough to produce all the steel furnished to the railroads."

In 1947, railroads and railroad equipment builders obtained 6,029,000 tons of rolled steel which went into the production of new freight and passenger cars, locomotives, repair of equipment and roadway, and other purposes connected with railroad operation. At the same time, the railroads turned back to the iron and steel industry, including foundries, 3,818,000 net tons of scrap. Scrap returned by the railroads to the industry in 1946 amounted to 3,164,000 net tons compared with 4,764,000 net tons of rolled steel received. In addition, the railroads salvage and reclaim each year approximately 1,000,000 tons of worn-out and obsolete parts and materials, which, as the A.A.R. put it, "help in solving the difficult problem of distributing available steel among the

many users dependent upon it."

Of the 29 million net tons of purchase scrap consumed by the iron and steel industry in 1947, railroads alone supplied 13.1 per cent. In 1946, the industry consumed 23 million net tons of purchase scrap, of which 13.8 per cent came from the railroads. As a result of Railroad Scrap Collection Week which took place April 5-10 this year, more than 286,000 net tons of scrap either were collected by the railroads or will be made available as a direct result of the drive, according to reports received by the A.A.R. Because of weather conditions and other factors which forced certain railroads in the extreme Northern sections to delay their scrap drive, this figure is expected to be increased when final reports have been received.

Spotting Service Decisions Based Solely on Ex Parte 104 Principles

Determinations by the Interstate Commerce Commission of the extent to which line-haul rates include car-spotting services at individual plants are based "solely" on the principles set out in the commission's general report on the terminal services phase of the Ex Parte 104 proceeding, and not on any findings in connection with tariff provisions or evidence as to whether or not published rates include compensation for switching within plant areas. The commission has made this clear in reports on reconsideration in two cases wherein enforcement of its previous orders was temporarily enjoined by the United States Court for the District of Utah.

As briefly summarized by the commission, the principles involved are those which hold that line-haul rates include only such spotting services at large industrial plants "as are rendered to shippers generally," i.e., "the equivalent of team or simple industrial track placement." The present proceedings relate to spotting services at plants of the American Smelting & Refining Co. at Garfield, Utah, Murray, and Leadville, Colo.; and the Midvale, Utah, plant of the United States Smelting & Mining Co. The commission's prior reports had designated certain tracks in the plant areas as convenient points of interchange and prohibited the serving railroads (Union Pacific and Denver & Rio Grande Western) from providing spotting services beyond those points, unless charges in addition to the line-haul rates were collected.

In setting aside the orders, the court recognized that the commission's decision establishing the spotting-service principles had been upheld by the United States Supreme Court, as had the commission's method of applying those principles at individual plants. The court nevertheless made findings of fact to the effect that the commission, in the present cases, did not exercise the "new" power which it obtained when the Supreme Court upheld its general Ex Parte 104 decision, but based its orders on findings that the line-haul rates to the plants involved did not cover spotting services. The commission thereupon reopened the proceedings for reconsideration. The present reports, both dated May 18, affirm the determinations of the prior reports; but the findings are phrased in the light of the court decisions.

"It is our purpose," as the commission put it in one of the reports, "to make it entirely clear here that our order herein is based solely upon our findings herein, which in turn are based solely upon the principles and authority established with the approval of the Supreme Court in our original and supplemental reports in Ex Parte 104, Part II, and that said order is not based in whole or in part on any conclusions or findings in connection with tariff provisions or testimony as to whether the published rates are reasonable and do or do not include compensation for switching within the plant areas. We hereby repudiate any reference or conclusion to the contrary conveyed by our discussion or evidence relative to such questions and the conclusions based thereon in our prior supplemental report herein."

Both reports noted that Commissioner Mahaffie dissented, and that Commissioner Alldredge did not participate in the disposition of the proceedings.

L.V. Opens New Freight Station in New York

The Lehigh Valley recently opened for business a new freight station at the foot of East 34th street on the East river in New York. The steel frame building, 420 ft. long and 54 ft. wide with a floor area of 21,540 sq. ft., replaces the road's freighthouse formerly located at the foot of East 48th street on the East River, which was demolished to permit development of the area as a site for the construction of facilities for the United Nations. Two 28-car capacity car floats can be docked on the water side of the new station, the second story of which houses the offices. The station, of fireproof construction supported with a modern sprinkler system, is equipped with 9 back-up doors and can accommodate 18 trucks simultaneously. Freight handling equipment, which will be fully mechanized, includes 3 electric fork lift trucks, 4 Mercury electric tractors, 125 trailers and a paper-loading machine.

Benefit Operations in March

Retirement and survivor benefit payments under railroad retirement legislation made during March amounted to $18,822,000, compared with $19,056,000 for February, the Railroad Retirement Board disclosed in the May issue of its "Monthly Review." The 8,815 awards made during the month were 19 per cent less than were made in previous month. At the end of March, 203,222 retirement annuities were in current-payment status, with $70.27 the average monthly payment.

The cumulative amount of benefit payments made under the unemployment insurance system since its inauguration in July, 1939, reached $150,000,000 during the month. Some 60,000 workers received unemployment insurance benefits during March, with $3,438,000 being paid in more than 120,000 registration periods.

Activities in the sickness benefits program reached a seasonal peak during the month as $2,914,000 were paid to 41,900 beneficiaries—the largest number since the program began in July, 1947. A total of 20,621 applications and 86,136 claims were filed during the month.

March Accident Statistics

The Interstate Commerce Commission has made public its Bureau of Transport Economics and Statistics preliminary summary of steam railway accidents for March and for this year's first three months. The compilation, which is subject to revision, follows:

Item	Month of March 1948	Month of March 1947	3 months ended with March 1948	3 months ended with March 1947
Number of train accidents *	1,048	1,546	3.468	4.541
Number of casualties in train, train-service and nontrain accidents:				
Trespassers:				
Killed	106	84	283	225
Injured	74	76	207	198
Passengers on trains:				
(a) In train accidents*				
Killed	—	—	14	26
Injured	51	44	377	407
(b) In train-service accidents				
Killed	2	3	7	6
Injured	232	191	633	617
Travelers not on trains:				
Killed	—	—	4	1
Injured	77	87	289	263
Employees on duty:				
Killed	56	63	176	177
Injured	2,710	3,089	8,615	9,426
All other nontrespassers:**				
Killed	148	208	450	614
Injured	540	640	1,918	1,947
Total — All classes of persons:				
Killed	312	358	934	1,049
Injured	3,684	4,127	12,039	12,858

* Train accidents (mostly collisions and derailments) are distinguished from train-service accidents by the fact that the former caused damage of more than $150 to railway property in 1947. Beginning January 1, 1948, this minimum was raised to more than $250.

** Casualties to "Other nontrespassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties *for all classes of persons, including both trespassers, and nontrespassers were as follows:*

Persons:				
Killed	143	200	421	579
Injured	342	410	1,218	1,328

Representation of Employees

The Brotherhood of Railway Clerks has been certified by the National Mediation Board as collective-bargaining representative of clerical, office, station and storehouse employees of the Montour and the Youngstown &

Southern, and the Railroad Yardmasters of America has been certified as representative of yardmasters employed by the Galveston Wharves and the Denver Union Terminal.

Except as to the yardmasters of the Galveston Wharves, where an election was held, the certifications were made on the basis of the board's investigations and checks of representation authorizations. All of these employee groups were formerly without representation.

The International Federation of Technical Engineers, Architects and Draftmen's Union has been certified to extend its coverage of Boston & Maine technical engineers, architects, draftsmen and allied workers to include bridge inspectors, assistant bridge inspectors and steel inspectors, as the result of a check of representation authorizations conducted by the National Mediation Board. The three latter classes of employees formerly were not represented by any organization.

The N.M.B. also has certified the American Railway Supervisors Association as the representative of subordinate officials in the maintenance of way and structures department of the Ann Arbor. These employees also were formerly without representation.

O.K.'s New Orleans-Shreveport Sleeper-Service Pool

Division 3 of the Interstate Commerce Commission has approved a plan whereby the Texas & Pacific and the Louisiana & Arkansas propose to pool their overnight sleeping-car services, and the earnings therefrom, between New Orleans, La., and Shreveport. The approval order embodies a reservation of the commission's "right to modify such approval by imposing additional or different terms as a condition of its continuance, or to revoke it entirely if in the future that course seems proper." The report was in Docket No. 29916.

More Money for Emergency And Arbitration Boards

President Truman has signed a recently-enacted deficiency appropriation bill (H.R.6055) which provides a supplemental appropriation of $48,800 for the National Mediation Board for the current fiscal year ending June 30. The money will be used for arbitration and emergency boards, for which N.M.B. had previously received another fiscal-1948 appropriation of $119,000.

New Railroad Opened in Mexico

The Sonora-Baja California, Mexico's newest railroad, was officially opened recently, according to a recent issue of Foreign Commerce Weekly. Work on the new line, which extends southeasterly about 325 miles from Mexicali (approximately 100 mi. southeast of San Diego, Cal.), to Benjamin Hill, near Caborca in the state of Sonora, was begun in 1937. The total cost of the project was 57,000,000 pesos. At Benjamin Hill the new line joins the Southern Pacific of Mexico, which at Guadalajara joins the National of Mexico system, connecting to Mexico City and other points. For passengers or cargo to go by land from Baja California to any other part of Mexico, it has hitherto been necessary first to enter the United States and then re-enter Mexico at some border point reached by a circuitous route.

Cite Safety in U. P. Coal Mines

Seven awards for safety during 1947 have been presented to the Union Pacific Coal Company (subsidiary of the U. P.) and its employees by the United States Bureau of Mines, Department of the Interior. The "Sentinels of Safety" trophy was awarded to the company's Winton (Wyo.) mines for 587,342 manhours without a lost-time injury. Also received were six certificates of honor of the Joseph A. Holmes Safety Association.

John E. Haines Appointed To F.R.P. Executive Council

John E. Haines, vice-president of the Minneapolis-Honeywell Regulator Company, has been appointed to the executive council of the Federation for Railroad Progress to represent the federation's railroad supplier members. Mr. Haines, who has been with Minneapolis-Honeywell for 19 years, succeeds Ernest Murphy, formerly president of the Pressed Steel Car Company. Mr. Murphy recently retired from active participation in business.

Gulf-to-New York Gas Pipeline Authorized

The Federal Power Commission has conditionally authorized the Trans-Continental Gas Pipe Line Company of Longview, Texas, to construct and operate a natural gas pipeline project extending from the Gulf Coast area of Texas and Louisiana to the east bank of the Hudson river at 132nd street in New York City.

The proposed project, which is intended to supply natural gas to the New York metropolitan area and other parts of the Middle Atlantic section, is planned to consist of approximately 1,840 miles of pipe, 15 compressor stations, and other appurtenant facilities. According to the company's estimates, it may cost between $151,000,000 and $181,000,000 and will be ready for operation in the fall of 1950. It will have a summer sales capacity of 325 million cubic feet per day and a winter season sales capacity of 340 million cubic feet per day.

Most of the gas to be sold by Trans-Continental is expected to be used by utility distributing companies of the area as a substitute for fuel oil and other fuels now used in the production of manufactured gas. Taking note of objections raised by the National Coal Association, the United Mine Workers of America, and other interveners in the case, the commission said that the natural gas to be supplied by the proposed project would displace relatively small amounts of coal and that the economic impact on these interveners should not be serious.

I.C.C. Issues Regulations For Mahaffie-Act Applications

Division 4 of the Interstate Commerce Commission has issued rules and regulations governing applications and certificates of notification and periodical reports under the recently-enacted legislation which adds to the Interstate Commerce Act a new section 20b, setting up procedures for the voluntary readjustment of railroad financial structures along lines of the former Chandler and McLaughlin acts. The rules and regulations were embodied in a May 25 order which occupies 12 double-spaced mimeographed sheets.

Provisions of the legislation, Public Law No. 478, were outlined in the *Railway Age* of April 17, page 57. On its way through Congress it became known as the "Mahaffie bill" because it was framed on the basis of recommendations submitted by Commissioner Mahaffie.

Will Operate Pullmans on L. & N. "Humming Bird" Beginning July 1

Pullman service will be inaugurated by the Louisville & Nashville on its "Humming Bird," operating between Cincinnati, Ohio, and New Orleans, La., effective on July 1 southbound and on July 2 northbound. The train—which presently offers coach service only—will continue on its present schedule. The new service, the road states, will permit Pullman passengers to complete the Cincinnati-New Orleans trip 4 hrs. 25 min. faster than at present.

Railroads Win Awards For Public Relations

The Chesapeake & Ohio, Union Pacific, and Southern Pacific were among winners of awards in the 1948 public relations achievement contest of the American Public Relations Association. The awards were made May 27 at a ceremony at the first International Public Relations Institute and exhibit of A.P.R.A. at American University, Washington, D. C.

The C. & O. won the trophy award—a 12-in. silver anvil—for the most effective public-relations use of newspapers, magazines, and trade publications. The award was accepted by Thomas J. Deegan, Jr., C. & O. director of public relations.

The U. P. award—a certificate of

public relations achievement—was in the same media classification; it was accepted by that road's Washington representative, Howard B. Blanchard. The S. P. award, also a certificate of public relations achievement, was in the media classification of "motion pictures and visual aids;" it was accepted by Standfield Johnson, who is assistant general attorney for that road.

A trophy award for the "most outstanding individual contribution to international relations" went to Drew Pearson, newspaper columnist, for his sponsorship of the "Friendship Train."

Ten Foreign Transportation Students Get Certificates

Ten students who completed the course of the Second Annual Foreign Transportation Institute, conducted by the American University, Washington, D. C., were awarded certificates at a dinner session at the Naval Gun Factory in Washington on May 26. Dr. L. M. Homberger, professor of transportation at the university, was director of the institute. Among those receiving certificates were J. W. Cure, Jr., assistant trainmaster, Norfolk Division, Norfolk & Western, and W. A. Newman, foreign freight traffic department, New York Central.

R. V. Fletcher, special counsel and former president of the Association of American Railroads, and chairman of the university's board of trustees, presented the certificates in the absence of Dr. Paul F. Douglass, president of the university. Judge Fletcher also made the principal address at the dinner.

Car-Truck Research Program Authorized by A.A.R. Board

Directors of the Association of American Railroads, at their regular monthly meeting in Washington, D. C., on May 28, authorized a freight-car-truck research program to be carried out under the general direction of the A.A.R. Mechanical Division in collaboration with truck and snubber manufacturers. As a result, the announcement predicted, "railroad freight cars will be smoother riding, faster and safer."

The program calls for laboratory and road tests of snubber devices and freight trucks designed for high-speed service. The tests will be carried on during the summer months, and will consist of comparing the operation, from a safety and riding standpoint, of existing types of freight car trucks and snubbers with new designs recently developed by the manufacturers.

The rolling laboratory of the American Steel Foundries, operated by their engineering experts and consisting of five freight cars specially equipped to test riding qualities and characteristics, will be used in the experiments. Proving ground for the road tests will be a 67½-mile stretch of track on the Illinois Central. This railroad will provide the locomotive and train crews for the operation of the test train.

Road tests of the new type freight car trucks will be conducted at speeds ranging from 65 to 90 miles an hour, with the new trucks carrying loads ranging from 60,000 to 169,000 lbs.

Performance of the new truck designs will be measured by scientific recording instruments. The results will be checked by A.A.R. Mechanical Division engineers, who will act as the official observers during the tests. Following the road tests, there will be supplementary laboratory investigations.

Would Require Uniform Mileage Rates on Grain

Representative Lemke, Republican of North Dakota, has introduced H.R. 6725 to amend the Interstate Commerce Act by adding provisions which would require the establishment of uniform per-mile rates "for the transportation wholly by railroad, or partly by railroad and partly by water, of any grain or grain product, whether or not for export."

A.A.R. Member Roads Will Vote On Proposal for Radio Program

The question of whether or not the Association of American Railroads should sponsor a radio program has been submitted to the association's member roads in a letter ballot which was sent out on June 2. The proposal had been discussed at the May 28 meeting of the A.A.R. board of directors in Washington, D. C., and the board directed that the vote be taken.

As now set out in tentative general plans, the proposed program would be of the musical or dramatic type. It would be a half-hour weekly broadcast on a nationwide hook-up at an estimated annual cost of $1,180,000.

Allows Pullman to Increase Rates for Rooms and Seats

Higher rates for Pullman room and seat accommodations became effective June 1, the Interstate Commerce Commission having voted last week not to suspend the Pullman Company's tariff which published the increases. For sleeping accommodations, the higher charges apply to so-called "luxury" accommodations, there being no increases in rates for berths or duplex single rooms (see *Railway Age* of March 6, page 64).

Sloan Foundation Establishes M.I.T. Executive-Training Fund

The Alfred P. Sloan Foundation has announced a grant of $225,000 to the Massachusetts Institute of Technology for a three-year program of research in the field of executive development and an educational program for young business executives. The grant provides for the re-establishment of the Sloan-sponsored fellowship program, which was carried on for a number of years before 1942 and was discontinued during the recent war. The new project, which will be a cooperative activity of the school's departments of business and engineering administration and economics and social science, will be started in the autumn of 1949. Fellowships will

STEEL, AUTOMOBILE AND OIL INDUSTRIES HAVE BIG STAKE IN FREIGHT CAR PRODUCTION

The steel, automobile and oil industries have "at least a 20 per cent stake" in the problem of increasing freight car production, according to an article in the current issue of Railway Cars, a publication of the American Railway Car Institute. This assertion, the article said, is based upon a survey, made for the institute, of the annual freight transportation needs of the three industries.

"The steel industry has announced," the article continued, "that its 1944 freight bill was, on incoming materials, $500,000,000; on outgoing products, $365,000,000; total, $865,000,000, which was about 12 per cent of the total railroad freight bill paid by all shippers that year. While no later figures have been published, railroad men believe that . . . the industry continues to pay about the same percentage of the total bill. . . . There is evidence enough to suggest that 'Steel & Customers' regularly need the use of at least one-sixth of all freight cars now operating. The oil industry last year paid a total freight bill on outgoing products which was considerably above $500,000,000. That was 7 per cent of the nation's total railroad freight bill. A representative of the American Petroleum Institute states that the above figures present an incomplete picture because there is no record of total freight charges on incoming supplies; and, many of the industry's by-products go into Interstate Commerce Commission traffic records under a 'chemical products' listing. It seems probable — and conservative estimating — that the oil industry regularly uses about one-twelfth of the total freight car fleet. The automotive industry's total railroad freight bill on shipping cars, trucks, parts and tires during 1946 was nearly $150,000,000. . . . That figure represents about 3 per cent of the nation's total railroad freight bill during 1946."

On the basis of these figures, the article concludes, "it seems conservative to estimate that the Big Three regularly require the use of more than one-fifth of the total freight car fleet. These industries all need to expand, to meet increased demand for their products. All need to be strong—able to meet any emergency. All have a big stake in the freight car problem."

be awarded to young business executives who show outstanding promise for leadership in their own companies and for service to industrial society. They will attend M.I.T. on leaves-of-absence from their companies for a year of graduate work in business administration and economics.

Freight Car Loadings

Total loadings of revenue freight for the week ended May 29 were not available when this issue of *Railway Age* went to press.

Loadings of revenue freight for the week ended May 22 totaled 879,158 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loadings
For the Week Ended Saturday, May 22

District	1948	1947	1946
Eastern ...	156,291	162,735	107,084
Allegheny .	187,580	193,495	108,749
Pocahontas .	76,108	72,355	52,725
Southern ..	140,621	135,846	93,455
Northwestern	126,723	136,904	76,670
Cent. West.	125,687	126,627	85,582
Southwest. .	66,148	62,643	47,208
Tot. West. Dists. ...	318,558	326,174	209,460
Tot. All Rds.	879,158	890,605	571,473
Commodities:			
Gr. & gr. prods. ...	39,387	44,656	34,905
Livestock ..	12,495	12,194	10,149
Coal	202,704	188,721	120,366
Coke	14,277	14,289	3,619
For. prods. .	46,052	45,851	32,394
Ore	77,409	79,349	28,641
Merch'd l.c.l.	107,365	119,626	91,728
Misc.	379,469	385,919	249,671
May 22 ...	879,158	890,605	571,473
May 15 ...	847,403	888,208	688,210
May 8 ...	880,617	884,242	684,942
May 1 ...	891,638	882,574	671,311
April 24 ...	852,309	893,712	660,264
Cumulative total, 21 weeks	16,338,835	17,295,916	14,952,964

In Canada.—Carloadings for the week ended May 22 totaled 76,655 cars as compared with 77,458 cars for the previous week and 71,132 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
May 22, 1948 ...	76,665	33,056
May 24, 1947 ...	71,132	34,680
Cumulative totals for Canada:		
May 22, 1948 ...	1,534,357	747,556
May 24, 1947 ...	1,472,730	783,711

Bureau of Explosives Issues Report for 1947

No persons were killed or injured because of the railroad transportation of commercial explosives during 1947, which marked the completion of the 26th consecutive year in which no explosions resulted from the movement by rail of class A commercial explosives, according to the annual report for 1947 of the Bureau of Explosives of the Association of American Railroads. The total reported property loss resulting from the transportation of explosives of all kinds, including fireworks and ammunition, was less than $500, the report added.

The transportation of dangerous articles other than explosives in 1947 resulted in a property loss of $403,667 and 775 accidents, including 85 fires and 1 explosion. There were no fatalities. Thirty-three persons were injured. Of the total number of accidents, electric storage batteries accounted for 175; gasoline for 153; sulphuric acid for 59; nitric acid for 39; strike-anywhere matches for 38; and hydrochloric acid for 30.

"During the year 302 amendments to the regulations for the transportation of explosives and other articles were submitted to the Interstate Commerce Commission and were approved and published," the report said. "A majority of these amendments were necessitated by continued emergency conditions or the development of new chemicals which are properly classed as dangerous articles. The headquarters and the laboratory staffs of the bureau conferred with experts in the field of nuclear physics for the purpose of determining the necessary precautions to assure safety in transportation of radioactive substances, and as a result of these conferences, were able to submit recommended regulations to the commission which were approved and promulgated. The quantities of these materials moving in rail express service has greatly increased in the past few years and commercial uses of the substances are constantly being developed.

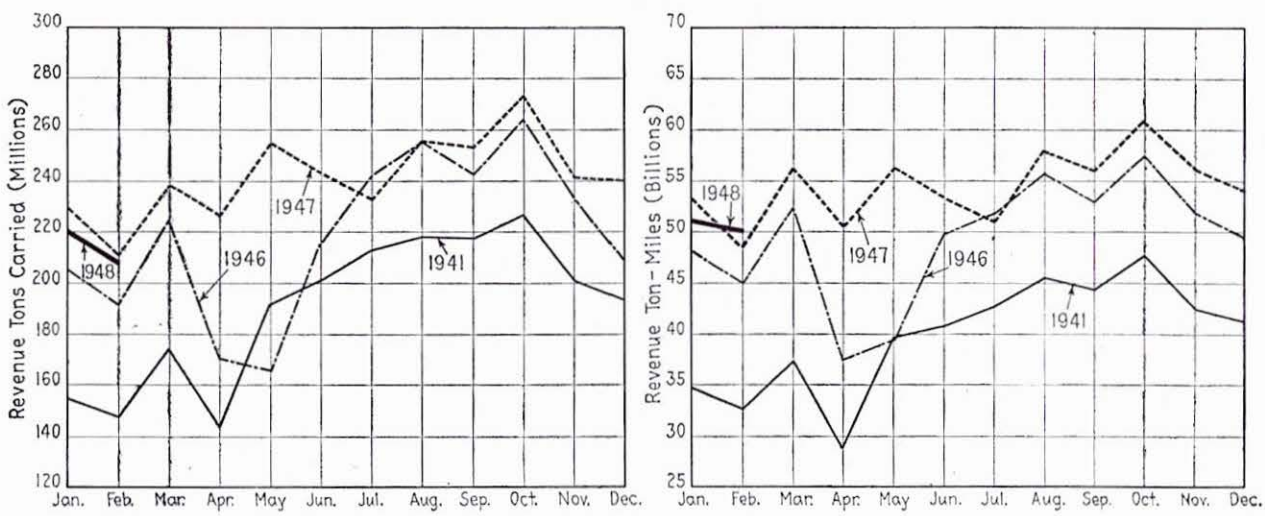
"There continues to be a serious shortage of materials for containers which are suitable for dangerous articles," the report pointed out, "making it necessary in the interest of the economy of the country to continue containers in service which would otherwise have been retired and to authorize containers on relatively short notice without the advantage of as complete an investigation of their suitability as would normally be conducted."

Program of Chicago Meeting of A.A.R. Mechanical Division

The Mechanical Divis'. . of the Association of American Railroads will meet Monday, June 28, through Wednesday, June 30, at the Congress Hotel, Chicago. The order of business is as follows:

Monday, June 28, 19-8
10:00 a.m. to 5:00 p.m.

Address by W. J. Patterson, member of the Interstate Commerce Commission.
Address by J. H. Aydelott, vice-president, Operations and Maintenance Department, Association of American Railroads.
Address by Chairman, Mechanical Division, J. M. Nicholson, assistant to vice-president, Atchison, Topeka & Santa Fe.
Action on minutes of annual meeting of 1947.
Appointment of committees on subjects, resolutions, etc.
Unfinished business.
New business.
Report of General Committee.
Report of Nominating Committee.
Discussion of reports on:
- Locomotive Construction
  - Steam and Electric Locomotive Section
  - Diesel Locomotive Section
  - Gas Turbine Locomotive Section
- Crank Pin Research
  - Discussion and motion picture of post-war rehabilitation of French railroads by Georges C. Behl, chief, French Railway Mission.



Revenue Tons and Revenue Ton-Miles—1948 Compared with 1941, 1946 and 1947

Tuesday, June 29, 1948
9:00 a.m. to 5:00 p.m.
Address by Dr. H. T. Heald, president, Illinois Institute of Technology.
Discussion of Reports on:
Arbitration
Prices for Labor and Materials
Brakes and Brake Equipment
Geared Hand Brakes
Loading Rules
Specifications for Materials
Couplers and Draft Gears
Lubrication of Cars and Locomotives
Journal Bearing Development
Development of Hot Box Alarm Devices
Safety Appliances
Wednesday, June 30, 1948
9:00 a.m. until program is completed
Discussion of Reports on:
Car Construction
Tank Cars
Wheels
Axle Research
Election of officers and members of General Committee.
Report of Committee on Resolutions.

Bulwinkle Bill, Limited to Rate Procedures, Goes to President

Congressional action on the Bulwinkle-Reed bill was completed May 28 when the Senate adopted the report of the Senate-House conference committee which embodied the House version of the measure with its provisions limiting the grant of anti-trust immunity for carrier joint agreements to those "relating to rates, fares, classifications, divisions, or charges (including charges between carriers and compensation paid or received for the use of facilities and equipment), or rules and regulations pertaining thereto, or procedures for the joint consideration, initiation or establishment thereof." The conference report had been adopted previously by the House, on May 24, so the bill, S.110, is now before President Truman.

The House version was sponsored by Representative Bulwinkle, Democrat of North Carolina, while the Senate version was sponsored by Senator Reed, Republican of Kansas. The latter was broader in that it would have granted immunity for all joint actions approved by the Interstate Commerce Commission, including those relating to services and schedules as well as rates. Provisions of the House version, which has now become the final version, were outlined in *Railway Age* of May 22, page 42. Adoption of the conference report by the House came without debate, but the Senate's favorable action was preceded by considerable debate in which opposition was expressed by several senators, including the Democratic leader, Senator Barkley of Kentucky.

The latter said he hoped President Truman would veto the bill, but added that he had "no knowledge" of what the President would do. Others who expressed like hopes for a Presidential veto included Senators Hill of Alabama and Russell of Georgia, Democrats. The final version does not contain that provision of the Senate bill, which was sponsored by Senator Russell and which stipulated that Georgia's anti-trust complaint against eastern and southern railroads would not be affected by the legislation. Neither does the final version contain various "safeguarding" amendments which Senator O'Mahoney, Democrat of Wyoming, succeeded in having added to the Senate version.

Like Senators Barkley, Hill and Russell, Senator O'Mahoney made an opposition speech during the Senate's debate on the conference report. Other opposition speakers included Senators Johnston of South Carolina and Murray of Montana, Democrats. Meanwhile, Senator Reed led the forces favoring the conference report, and the principal speeches in support of that position were made by him and by Senators Hawkes of New Jersey, Republican, Holland of Florida, and Myers of Pennsylvania, Democrats.

The only discussion of the conference report in the House was a statement by Representative Lea, Democrat of California, former chairman and now ranking minority member of the committee on interstate and foreign commerce. Mr. Lea conceded that the bill embodied in the conference report was "perhaps as good as we could expect at this time," but he then proceeded to go on record in favor of a broader measure. The relief provided by the present bill "is very limited in its application and does not purport to cover but few" of the various types of carrier agreements, Mr. Lea said.

New C. E. D. Chairman

W. Walter Williams, president of Continental, Inc., a Seattle, Wash., banking, insurance, real estate and property management firm, has been elected chairman of the Committee for Economic Development, succeeding Paul G. Hoffman, chairman since the organization was established in July, 1942, who resigned from that office after he was appointed administrator for economic cooperation.

Stations Handling Unit Loads —Additions and Correction

Not included in the list of stations equipped with lift trucks for handling palletized freight or other unit loads, published in *Railway Age* of May 15, page 156, were three freight stations of the Texas & Pacific, which are equipped as follows:

Louisiana		
New Orleans	T.&P.	4,000 lb. Max. Capy.
Texas		
Dallas	T.&P.	2,000 lb. Max. Capy.
Fort Worth	T.&P.	2,000 lb. Max. Capy.

Typographical errors created confusion in the listing of equipped stations in New York in that issue. Those errors appeared on page 158 and the railroads concerned are the Delaware, Lackawanna & Western, Pennsylvania and Baltimore & Ohio. Desbrosses St., 37th St. and Piers 40, 49-50, and 52 should read P.R.R., while Piers 13, 41 and 68, North River, and Pier 26 East River should read D.L.& W. Piers 22, 39 and W. 26th St. should all read B. & O.

SUPPLY TRADE

Ralph F. Koeneman has been appointed assistant chief engineer of the passenger car division of the **American Car & Foundry Co.**, at Berwick, Pa. Mr. Koeneman joined American Car & Foundry in 1916 at Madison, Ill. He progressed through various positions in the engineering departments of the St. Louis, Mo., and St. Charles plants and, in 1939, helped organize the ordnance

Ralph F. Koeneman

division at Berwick. In 1941 he organized the construction of light combat tanks at St. Charles, and during World War II worked in ordnance engineering and development. In February, 1946, he returned to the design of railroad passenger cars in the passenger car engineering office at New York, remaining there until his recent appointment.

The **American Locomotive Company** has announced four new appointments, as follows: **John D. Coleman** as regional service manager for the western region, with headquarters in Chicago; **Carl A. Gandy, Jr.** as district sales representative, with headquarters in Atlanta, Ga., to replace **John F. Corcoran**, who has been transferred to the Chicago office to take charge of sales activities for the railway steel spring division in the Chicago area; and **Paul N. Strobell** has been appointed district engineer for the New York district.

A. L. Kreamelmeyer, general traffic manager of the **Eagle-Picher Company**, at Cincinnati, Ohio, has assumed new duties in charge of traffic and transportation for all divisions and subsidiaries of the company, succeeding **H. A. Gray**, whose resignation was reported in the *Railway Age* of May 29.

George P. Lacy has been appointed manager of railroad sales of the **Sheffield Steel Corporation**, with headquarters at Kansas City, Mo., and **George P. McCracken**, who has served under Mr. Lacy for the past three years, has been

appointed district manager of the San Antonio, Texas, office, succeeding Mr. Lacy. The company also has announced that **Ernest Baxter,** vice-president of the

George P. Lacy

firm, has retired after more than 30 years of continuous service but will continue to serve in a consulting capacity.

Mr. Lacy has been associated with Sheffield for twelve years. He served in various clerical capacities before his first sales assignment, which was in the Missouri territory, and later was in charge of the Little Rock, Ark., and Dallas, Tex., offices, successively. He

Ernest Baxter

was then appointed district manager of the San Antonio office, which position he held at the time of his recent appointment.

Mr. Baxter began his career in 1903 as a railroad messenger at London, Ont. and spent the next 15 years in various clerical and official capacities in the operating and executive departments of railroads in Canada and the United States. He resigned as a railroad officer to join Sheffield Steel in 1918 as manager of railroad sales. Successively, he served as general manager sales, assistant to president and vice-president.

Raymond E. Valentine has been appointed district sales manager at the St. Louis, Mo., office of the **National Malleable & Steel Castings Co.,** to succeed **John H. Jaschka,** who has retired after 47 years' service, and **Howard Stark,** formerly field engineer at the Chicago office, has been appointed assistant district sales manager at St. Louis.

Raymond E. Valentine

Mr. Valentine joined National Malleable in 1913. During World War II, he was chief of the malleable iron section, forgings and castings branch, of the War Production Board. He returned to the company in 1945 as assistant district sales manager at the St. Louis office. Mr. Stark joined the company in 1920 at Cleveland, Ohio. He was later appointed chief inspector at the Toledo, Ohio, works and subse-

Howard Stark

quently held a similar post at the Chicago plant until his appointment as field engineer at the Chicago district sales office in 1945.

Victor G. Curry, vice-president in charge of sales in Canada for the **Union Railway Equipment Company,** has retired because of ill health. **Wayne K. Davidson** has been appointed exclusive sales representative in Canada for the firm's devices.

George A. Huggins, formerly manager of the Santa Monica (Cal.) plant of the Douglas Aircraft Corporation, has joined the **Pullman-Standard Car Manufacturing Company** as general manager of its car works in Chicago.

OBITUARY

James J. Hughes, sales agent in Chicago for the Ohio Steel Foundry Company for the past 26 years, died in that city on May 18, after a short illness. Mr. Hughes was formerly associated with the Chicago, Rock Island & Pacific, the Delaware, Lackawanna & Western and American Steel Foundries. He was 67 years old.

Walter Lewis Conwell, president of the Safety Car Heating & Lighting Co. since 1919, died at his home in Montclair, N. J., on May 27. He was 71 years old.

ORGANIZATIONS

At a recent meeting of the **American Railway Development Association** held in New Orleans, La., C. H. Slayman, general industrial commissioner of the Chesapeake & Ohio, at Cleveland, Ohio, was elected president for the coming year. Other officers elected are: first vice-president, J. W. Jarvis, supervisor, agricultural development, Union Pacific, Omaha, Neb.; second vice-president, W. E. Deaton, industrial and tax commissioner, Elgin, Joliet & Eastern, Chicago; and secretary-treasurer, L. P. East, general agricultural agent, Pennsylvania, Richmond, Ind. The association's next annual meeting will be held at Old Point Comfort, Va., in April, 1949.

The **Trans-Missouri-Kansas Shippers Board** will hold its 80th regular meeting on June 9, at Hotel Lassen in Wichita, Kan.

J. E. Goodwin, chief mechanical officer of the Chicago & North Western at Chicago, was elected president of the **Western Railway Club** at the annual meeting in Chicago on May 27. W. H. Hillis, vice-president of the Chicago, Rock Island & Pacific, was elected first vice-president, and L. J. Ahlering, purchasing agent of the Chicago & Eastern Illinois, was elected second vice-president. Re-elected treasurer and executive secretary, respectively, were Albert Schiffers, Jr., purchasing agent of the Union Tank Car Company, and Earl E. Thulin of the E. E. Thulin Company.

The annual outing and dinner of the **Toronto Railway Club** will be held on June 14 at the Royal Hotel, Guelph, Ontario.

H. Eugene Dickhuth of the New York Herald Tribune was elected president of the **New York Financial Writers' Association** at the organization's annual meeting on May 27. Samuel Shulsky of the New York Journal-American was elected vice-president; Charles Macko of the Wall Street Journal, treasurer; and Fred B. Stauffer of the New York Herald Tribune, secretary. Elected to the board of governors were: George E. Shea, Jr., of Barron's; T. E. Applegate of the Associated Press; Alfred F. Connors of the United Press Associations; Robert Denver of the New York World Telegram; and Thomas D. Waage of the Journal of Commerce.

CONSTRUCTION

Lake Superior & Ishpeming.—This company has applied to the Interstate Commerce Commission for authority to construct a line extending 14.3 miles from Ishpeming, Mich., to Republic, to serve iron ore developments.

EQUIPMENT AND SUPPLIES

Domestic Equipment Orders Reported in May

Domestic orders for 125 Diesel-electric locomotives, plus 19 additional Diesel units, 1,791 freight cars and 36 passenger-train cars were reported in *Railway Age* in May. The estimated cost of the motive power is $24,000,000 and the freight cars will cost approximately $7,175,000. The passenger-train cars will cost an estimated $1,600,000. The accompanying table lists the orders in detail.

During the first five months of 1948, *Railway Age* has reported domestic orders for 482 Diesel-electric locomotives, plus 19 additional Diesel units, and 34 steam locomotives costing an estimated $98,492,000; a total of 43,570 freight-train cars, the estimated cost of which is $171,043,500; and 234 passenger-train cars, at an estimated cost of $27,250,000.

FREIGHT CARS

The **Chicago & North Western** is inquiring for 15 or 25 70-ton covered hopper cars.

The **Clinchfield** is inquiring for 500 50-ton hopper cars.

The **Gulf, Mobile & Ohio** is inquiring for 500 50-ton hopper cars and 500 50-ton gondola cars.

The **Norfolk & Western** is inquiring for 1,000 70-ton hopper cars.

The **Western Maryland** is inquiring for 200 50-ton gondola cars, 200 50-ton box cars, 50-ton auto cars and 50 70-ton mill-type gondola cars.

PASSENGER CARS

The **New York Central** has ordered 30 130-passenger, air-conditioned multiple-unit cars from the St. Louis Car Company at an approximate cost of $3,000,000. Delivery of the equipment is scheduled for late next year. The new 85-ft. long cars, to be used in Westchester county, N. Y., commuter service, will be constructed of low-alloy, high-tensile steel and furnished with automatic temperature controls, fluorescent lights, tight-lock couplers and twin-cushion draft gears. Inquiry for the cars was reported in *Railway Age* of January 10, page 53.

LOCOMOTIVES

The **McCloud River** has ordered 1 1,500-hp. Diesel-electric switching locomotive from the Baldwin Locomotive Works at an estimated cost of $163,000. Delivery is scheduled for next September.

SIGNALING

The **New Orleans, Texas & Mexico** has ordered equipment from the General Railway Signal Company for the installation of double-end operation Type-F centralized traffic control on approximately four miles of single track at Houston Yard, Tex. The 36-in. control panel will have 10 track indication lights and 6 levers for the control of 3 switch machines and 10 signals. Included in this order are steel bungalows, Model-5D dual-control electric switch machines, Types-D and G signals, and Type-K relays.

Date	Purchaser	No.	Type	Builder
		Locomotives		
May 1	N.Y.C.	12	3,000-hp. D.-E. frt.	Electro-Motive
		37*	1,000-hp. D.-E. sw.	Electro-Motive
		4	4,000-hp. D.-E. frt.	Fairbanks, Morse
		2	1,000-hp. D.-E. sw.	Fairbanks, Morse
		2**	2,000-hp. D.-E. trans.	Fairbanks, Morse
		6	3,000-hp. D.-E. frt.	American
		26***	1,000-hp. D.-E. sw.	American
		10	600-hp. D.-E. sw.	American
May 22	Reading	15	1,000-hp. D.-E. sw.	Baldwin
May 29	C. & E. I.	15	1,500-hp. D.-E. frt. unit	Electro-Motive
		2	1,500-hp. D.-E. pass. unit	Electro-Motive
		2	1,500-hp. D.-E. br. line unit	Electro-Motive
		2	1,000-hp. D.-E. sw.	Electro-Motive
May 29	S. P.	3	6,000-hp. D.-E. pass.	American
		6	4,000-hp. D.-E. pass.	American
		Freight Cars		
May 1	St. L. Southwestern.	50	70-ton Cov. Hopper	Amer. Car & Fdy.
May 8	N. & W.	100	70-ton Cov. Hopper	Greenville
May 22	G. N.	500	50-ton Box	R. R. Shops
May 22	W. M.	1,000	55-ton Hopper	Bethlehem Steel
May 29	Erie	11	125-ton Flat	R. R. Shops
May 29	St. L.-S. F.	130	10,000-gal. Tank	Amer. Car & Fdy.
		Passenger Cars		
May 8	Wabash	6	Sleeping	Amer. Car & Fdy.
May 22	Erie	30	Head-end	Amer. Car & Fdy.

*29 for the Indiana Harbor Belt.
**For the Indiana Harbor Belt.
***10 for the Pittsburgh & Lake Erie.

CAR SERVICE

Director Homer C. King of the I.C.C.'s Bureau of Service has asked the Car Service Division, A.A.R., to cooperate in an undertaking to secure "full compliance" by grain-carying roads with provisions of Third Revised Service Order No. 244, which prescribes rules for the distribution of grain cars at country loading points in periods of car shortage. Mr. King discussed the matter in a May 24 letter, copies of which have been sent by C.S.D. to all railroads.

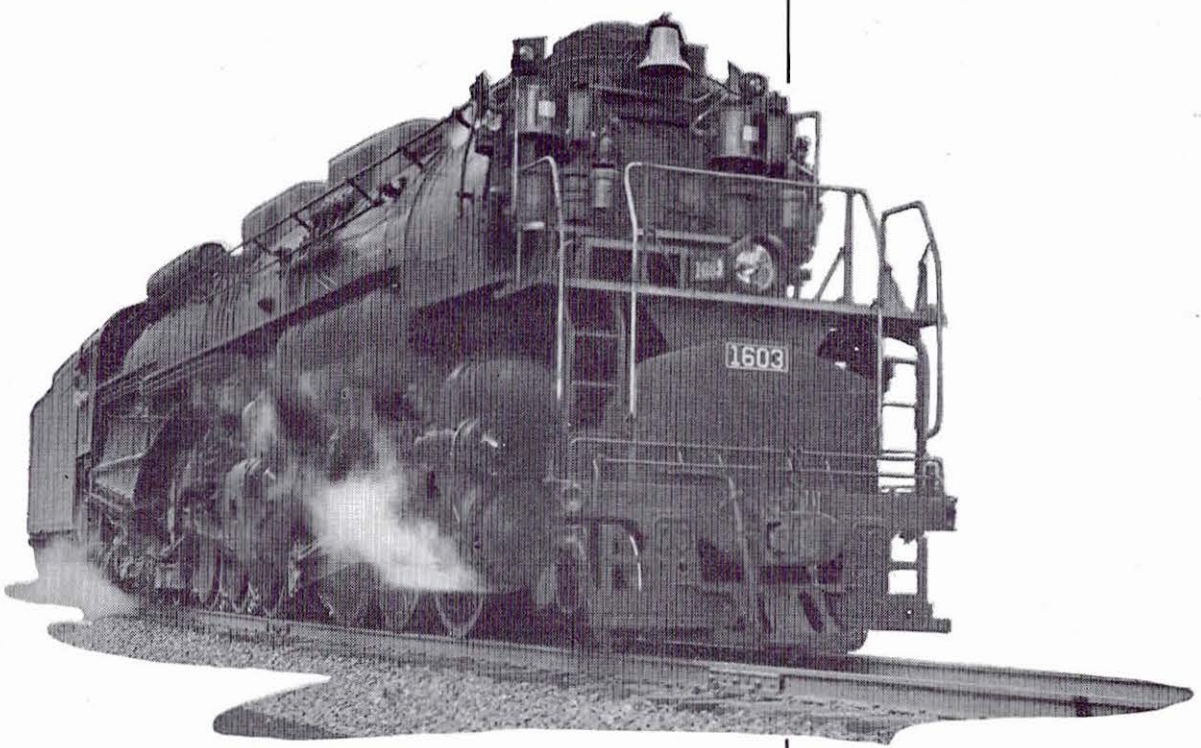
The letter stated that investigations made by the commission had indicated "considerable laxity" on the part of railroad agents at country loading points in observing the provisions of the order. Thus C.S.D. was asked to advise all grain-carrying roads to circularize their country loading stations with copies of the order and "with directions that the local agents henceforth fully comply with the provisions of the order by requiring of shippers the entire information outlined in the order prior to the furnishing of railway cars."

Mr. King went on to suggest that such efforts toward observance "should obviate the necessity of filing in the future a multiplicity of civil actions against railroads." At the same time, however, he advised that nothing in his letter "should be construed as precluding the commission from initiating civil actions against carriers for past or future failure to comply with the provisions" of the presently applicable order or its predecessor, Second Revised Service Order No. 244.

Chairman A. H. Gass of the Car Service Division, A.A.R., has asked railroad transportation officers to cooperate in the current C.S.D. program, to expedite the turn-around of open-top cars. The program calls for restriction by shippers of open-top orders to "bare day-to-day needs"; prompt

News Department continued on next left-hand page

there is a place . . .



We firmly believe that for a long, long time, there will continue to be a demand for steam locomotives.

Therefore, while we *are* building diesel-electrics for the switching field — and while we *have* the highest hopes for the free-piston gas generator turbine which we are now testing for locomotive use— we will continue to build a complete line of steam locomotives.

We will continue to explore all possible ways of improving such locomotives. We will continue to build them with the traditional fineness of design and manufacture that is responsible for Lima's world-wide reputation. And we will continue to believe that there is a place for these locomotives —for such modern power as the 2-6-6-6's we are now building, as our fifth order for the C&O.

LIMA HAMILTON CORPORATION

DIVISIONS: *Lima, Ohio* — Lima Locomotive Works Division; Lima Shovel and Crane Division. *Hamilton, Ohio* — Hooven, Owens, Rentschler Co.; Niles Tool Works Co.

PRINCIPAL PRODUCTS: Locomotives; Cranes and shovels; Niles heavy machine tools; Hamilton diesel and steam engines; Hamilton heavy metal stamping presses; Hamilton-Kruse automatic can-making machinery; Special heavy machinery; Heavy iron castings; Weldments.

loading, billing and unloading, "even to the extent of overtime or extra crew work"; and prompt notification of serving road as to when loads and empties will be ready for pulling. "Car loadings of coal for the past four weeks have been the heaviest for any similar period for some 20 years," Mr. Gass said. "There is no prospect of decreased demand for open tops for coal loading in the near future and with the advanced road building and construction season, open top car supply cannot be other than precarious for some time. I have asked our district managers to convey this word to all shippers and receivers of open-top commodities in their respective territories, telling them the only hope of reasonably meeting the need for open-top cars lies in faster turn-around." Mr. Gass also said that C.S.D. forces "will concentrate for the present on checks of open-top detention and performance on current open top special car orders or requests, plus Box Car Order 49."

I.C.C. Service Order No. 534 (revised) has been modified by Amendment No. 4, which names Chairman A. H. Gass of the Car Service Division, A.A.R., as commission agent to control the distribution of empty freight cars. The former commission agent was Mr. Gass' predecessor in the Car Service Division chairmanship—Warren C. Kendall.

FINANCIAL

Alabama Great Southern.—*Dividend.*—This road has declared dividends of $4 each on the 6 per cent preferred stock and the ordinary stock, both payable on June 26 to stockholders of record on May 26. The previous payment on each issue was $3 a share on last December 24.

Alton & Southern-St. Louis & Ohio River. *Consolidation.*—Acting upon the request of the applicants, Division 4 of the Interstate Commerce Commission has dismissed, without prejudice, their application to consolidate their properties into a single corporation under the name of the Alton & Southern and for authority for the consolidated corporation to issue securities. The entire capital stock of both roads is owned by the Aluminum Company of America, which has filed a new application with the commission in which it asks that the A. & S. be permitted to purchase all assets (except cash) of the St. L. & O. R. and to operate its properties.

Chicago, Rock Island & Pacific.—*Control.*—This company has applied to the Interstate Commerce Commission for authority to acquire, through ownership of stock, control of the Warren & Ouachita Valley. The applicant proposes to purchase all 1,150 shares of the W. & O. V.'s capital stock from the Southern Lumber Company for $43,183. The entire cost of the acquisition, is not expected to exceed $65,000.

Chicago & Western Indiana.—*Operating Agreement.*—Division 4 of the Interstate Commerce Commission has approved certain modifications of an intertenant agreement of 1882 so as to provide the terms and conditions under which this road, as agent, will furnish at cost terminal facilities and services in Chicago for the Chicago & Eastern Illinois, Chicago, Indianapolis & Louisville, Erie, Grand Trunk Western and Wabash. Each of the latter owns one-fifth of the stock of the C. & W. I., the properties of which also are used by the Elgin, Joliet & Eastern, Belt Railway of Chicago and the Atchison, Topeka & Santa Fe. The modified agreement also provides, among other things, for a revised basis of distribution of various expenses and other obligations of the C. & W.I., and for a division among the five proprietary companies of all the revenues, income and profits accruing to that road.

Central of Georgia.—*Reorganization.*—The reorganization managers of this road have asked the Interstate Commerce Commission to issue an order authorizing (1) the issuance of securities by the reorganized company and the voting trustees and the assumption of obligations and liabilities by the reorganized company, as contemplated by the plan of reorganization for this road under section 77 of the Bankruptcy Act; and (2) the transfer to and the acquisition by the reorganized company of the properties of the trustee of the debtor company and the properties of the Augusta & Savannah and the Chattahoochee & Gulf, which transactions also are contemplated by the plan.

Erie.—*Control of Leased Line.*—Division 4 of the Interstate Commerce Commission has authorized this road to acquire, through ownership of capital stock, control of the Rochester & Genesee Valley, which has been operated under lease by the Erie since 1871. The R. & G. V. has 5,552 shares of stock outstanding, par value $100 per share, of which the Erie owns 2,604 shares and the public 2,948 shares. According to the report, the control will be effected by the purchase of additional shares from time to time, as the stock becomes available at what are considered reasonable prices. The purchase will be financed with funds in the Erie's treasury.

Minneapolis, St. Paul & Sault Ste. Marie.—*New Directors.*—W. A. Mather, president of the Canadian Pacific, at Montreal, Que., and W. L. Huff of Minneapolis, Minn., have been elected directors of this road.

New York, New Haven & Hartford.—*Reorganization.*—Division 4 of the Interstate Commerce Commission has fixed maximum limits of final allowances for services and expenses of parties in interest and their counsel during the period, generally, from January 1, 1947, to the termination of the proceedings in connection with the reorganization of this road under section 77 of the Bankruptcy Act. The commission allowed $207,967 of claims amounting to $284,078.

Among the larger allowances fixed were the following: Davis, Polk, Wardwell, Sunderland & Kiendl, as counsel for the reorganization committee, $122,007, on a claim of $152,007, and the same firm, as counsel for the so-called insurance group committee, $15,000, on a claim of $25,000; and Ely, Bradford, Bartlett, Thompson & Brown, as counsel for the Old Colony bondholders' protective committee, $55,516, on a claim of $81,764.

New York, New Haven & Hartford.—*To Issue Stock for Claims.*—The United States District Court in New Haven, Conn., has approved a petition of this road's reorganization committee to issue 469,167 shares of new common stock of the reorganized company in settlement of $49,916,727 unsecured claims against the company. One share of common is to be issued for each $100 of claims.

The court also approved the issuance of certificates of interest in any further distribution of common stock that may be made to these claimants and reserved $60,468,473 of common stock to be issued to the security holders of the Boston Terminal Company and the Boston & Providence, and possibly to the holders of the old secured 6 per cent bonds of 1940. If any common stock remains out of the authorized total of $107,385,200 after the latter claims are satisfied, holders of unsecured claims will receive additional common. Legal expenses totaling $207,967, bringing to approximately $1,400,500 the total legal cost of the road's 12-year receivership, also were approved by the court.

Tennessee.—*Bonds.*—This road has reapplied to the Interstate Commerce Commission for authority to extend from August 2 to August 2, 1968, the maturity date of $917,200 of outstanding 6 per cent 30-year income debenture bonds. Although the commission already has authorized the road to extend the bonds in a section 20a proceeding, as reported in *Railway Age* of April 10, page 75, the applicant said it was reapplying for similar authority under section 20b of the Interstate Commerce Act because holders of about 3 per cent of the bonds either are unknown or have failed to consent to the extension plan. Section 20b is the recently-enacted "Mahaffie" Act, which sets up procedures for the voluntary readjustment of railroad financial structures along lines of the former Chandler and McLaughlin Acts (see

News Department continued on next left-hand page

A LOCOMOTIVE MODERNIZED WITH THE FRANKLIN SYSTEM OF STEAM DISTRIBUTION

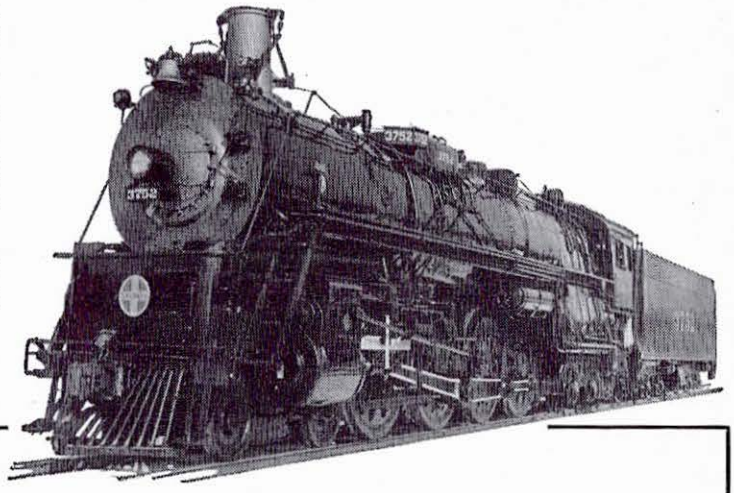
handles . . .

more freight

. . . faster with less fuel and lower maintenance

There are no other changes or combinations of changes which you can make in existing steam motive power that will produce such fundamental improvements in locomotive performance as equipping the engine with the Franklin System of Steam Distribution, using poppet valves. Without increasing fuel consumption or boiler capacity, you can increase horsepower at normal operating speeds by 19% to 30%. When this greater power is not being utilized, you will normally achieve average fuel savings ranging from 15% to 25%, depending on operating conditions.

We would like to give you figures to show what can be expected in the way of improvements from your own locomotives.



On February 4th, Sante Fe's 4-8-4 type locomotive, No. 3752, re-entered service—modernized and equipped with the Franklin System of Steam Distribution, Type B. It went into regular freight service immediately and has continued in this service without interruption. It has proved its ability to handle heavier loads and has made some remarkable cuts in running time of heavy freights. While figures are not yet available it is evident that fuel and water consumption are substantially reduced. To date valve-gear maintenance has been practically nil and there is every indication that — with poppet valves, with the simplicity of the rotary valve-gear that has all driving parts located on the outside, and with improved drifting — machinery maintenance will be reduced and locomotive availability greatly increased.

FRANKLIN RAILWAY SUPPLY COMPANY

NEW YORK • CHICAGO • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
AUTOMATIC FIRE DOORS • DRIVING BOX LUBRICATORS • STEAM GRATE SHAKERS • FLEXIBLE JOINTS • CAR CONNECTION

Railway Age of April 24, page 66, and April 17, page 57).

New Securities

Applications have been filed with the Interstate Commerce Commission by:

Chicago & North Western.—To assume liability for $5,340,000 of equipment trust certificates, the proceeds of which would be applied toward the purchase from the Pullman-Standard Car Manufacturing Company of 1,500 freight cars at a total cost of $6,690,000. The new equipment will include 1,000 50-ton box cars costing $4,464 each and 500 70-ton hopper cars costing $4,452 each. Competitive bids have been invited for the certificates, such bids to name the interest rate and to be submitted on the basis of both 10 and 15-year terms for the certificates.

Point Comfort & Northern.—To issue 5,000 shares of common stock of $100 par value in connection with financing of its proposed 12-mile line from Point Comfort, Tex., to Lolita. The line would serve a plant of the Aluminum Company of America, which would acquire all but a few shares of the proposed issue of stock.

Division 4 of the I.C.C. has **authorized:**

Gulf, Mobile & Ohio.—To issue $1,000,000 of series B first and refunding mortgage 4 per cent bonds, due in 1975, to be applied as required by sinking fund requirements under the general mortgage of July 1, 1940, which provides that annual sinking fund payments equal to 1½ per cent of the aggregate principal amount of bonds be made in respect of the series A and B bonds, issued in the amounts of $6,025,800 and $22,675,000, respectively.

The applicant, in anticipation of meeting the sinking fund requirements, has purchased $316,000 of New Orleans Great Northern series A first mortgage 5 per cent bonds, and proposes to purchase an additional $684,000 of the same series from time to time at prices not exceeding their principal amount. It proposes to deposit these bonds with the trustee as the basis for the issue for sinking fund purposes of the series B bonds, which will be delivered to the trustee of the general mortgage from time to time in amounts required to meet sinking fund requirements of the series A and B general mortgage income bonds or for purchase by the trustee with funds in the sinking fund accounts. The financing thus approved will result in "substantial reduction" in fixed charges, the commission said.

Southern Pacific.—To assume liability for $11,100,000 of series X equipment trust certificates, the proceeds of which will be applied toward the purchase of equipment estimated to cost $16,669,241, as outlined in *Railway Age* of April 24, page 76. The certificates will be dated May 1 and will mature in 10 annual installments of $1,110,000, starting May 1, 1949. The report also approves a selling price of 99.191 with a 2⅛ per cent interest rate, the bid of Salomon Brothers & Hutzler and associates, which had been accepted subject to commission approval, and on which basis the average annual cost will be approximately 2.29 per cent.

Dividends Declared

Allegheny & Western. — guaranteed, $3.00, semi-annually, payable July 1 to holders of record June 21.

Atchison, Topeka & Santa Fe. — 5% non-cum. preferred, $2.50, semi-annually, payable August 2 to holders of record June 29.

Bangor & Aroostook. — 5% preferred, $1.25, quarterly, payable July 1 to holders of record June 8.

Beech Creek. — 50¢, quarterly, payable July 1 to holders of record June 7.

Chesapeake & Ohio. — common, 75¢, quarterly, payable July 1 to holders of record June 7; 3½% convertible preferred, 87½¢, quarterly, payable August 1 to holders of record July 7.

Cincinnati, New Orleans & Texas Pacific. —$4.00, payable June 24 to holders of record June 9.

Dayton & Michigan. — 8% preferred, $1.00, quarterly, payable July 6 to holders of record June 15.

East Mahanoy. — $1.25, semi-annually, payable June 15 to holders of record June 5.

Erie. — 50¢, payable June 20 to holders of record June 2.

Kansas City Southern. — 4% preferred, $1.00, quarterly, payable July 15 to holders of record June 30.

New Orleans & Texas Pacific.—increased, $4.00, payable June 24 to holders of record June 9.

New York & Harlem. — common, $2.50, semi-annually; 10% preferred, $2.50, semi-annually, both payable July 1 to holders of record June 11.

Oahu. — 30¢, payable June 12 to holders of record June 5.

Pittsburgh, Ft. Wayne & Chicago. — common, $1.75, quarterly, payable July 1 to holders of record June 10; 7% preferred, $1.75, quarterly, payable July 6 to holders of record June 10.

Reading. — 4% 2nd preferred, 50¢, quarterly, payable July 8 to holders of record June 17.

West Jersey & Seashore. — 6% guaranteed, $1.50, semi-annually, payable June 1 to holders of record May 15.

Average Prices Stocks and Bonds

	June 1	Last week	Last year
Average price of 20 representative railway stocks	54.62	54.78	44.11
Average price of 20 representative railway bonds	89.94	89.64	86.32

ABANDONMENTS

Moore Central.—Examiner J. S. Prichard has recommended in a proposed report that Division 4 of the Interstate Commerce Commission authorize this road to abandon its entire line, extending approximately 10 miles from a connection with the Seaboard Air Line at Cameron, N. C., to Carthage. The action was recommended subject to the condition that the line, or any portion thereof, be offered for sale for continued operation at not less than the net salvage value.

New York, Susquehanna & Western.—Approval by Division 4 of the Interstate Commerce Commission of a transaction designed to enable the trustee of this road to enter into new negotiations with the New York Central with respect to compensation received in connection with trackage rights agreements in the vicinity of Edgewater, N. J., is recommended in a proposed report by Examiner C. A. Bernhard.

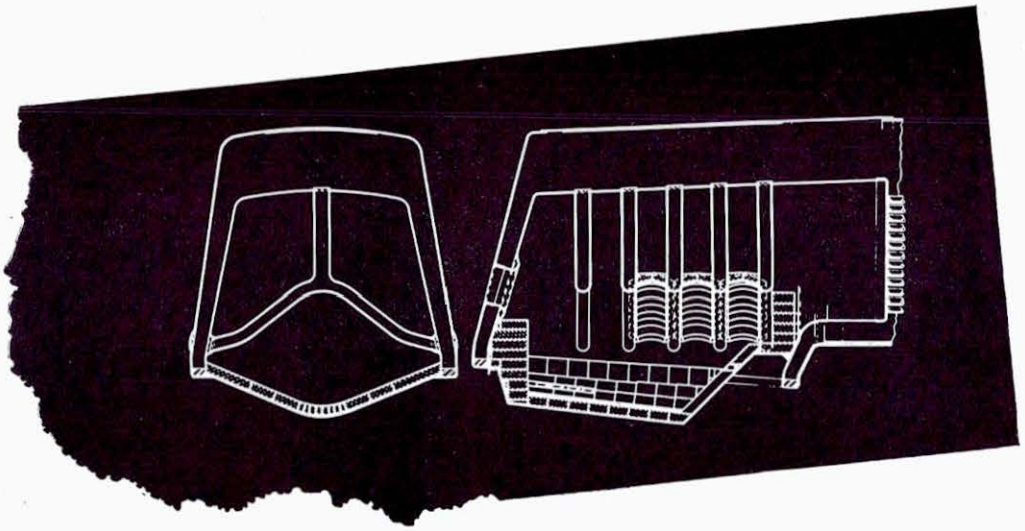
The report is in Finance Docket No. 15795 and recommends that the commission find that public convenience and necessity permit the abandonment of operation over portions of the Susquehanna at Edgewater by the N.Y.C. and its affiliated lines, and abandonment of operations by the Susquehanna over portions of the New Jersey Junction, a subsidiary of the N.Y.C., south of Edgewater. Such abandonments, according to the examiner, would be consistent with the reorganization requirements of the Susquehanna.

In effect, approval by the commission of the examiner's recommendations would not result in any change in the method in which the Susquehanna physically handles the N.Y.C. cars, but contemplates the rejection of the trackage rights agreements of 1904 and 1911 under which present operations are carried on. As reported in *Railway Age* of August 2, 1947, page 63, the Susquehanna contended in part that the agreements were created to its disadvantage in 1904 when, it said, it was under control of the Erie and had no independent voice in the latter's negotiations with the N.Y.C. It further held that the N.Y.C. cannot physically exercise its trackage rights in any manner compatible with good transportation service and that exercise by the N.Y.C. of trackage rights over the Susquehanna has been accomplished only by the latter handling N.Y.C. cars as its agent. Such services, it said, have resulted in "burdensomely low" compensation, adding that its payments for use of the N.Y.C. tracks have been "disproportionately large."

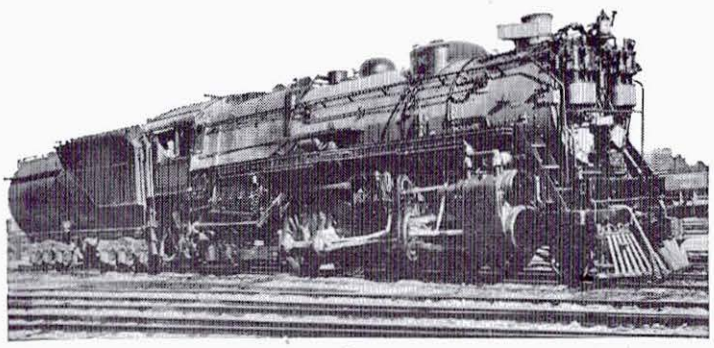
Examiner Bernhard said that it is the intent of his recommendations that the abandonments not be authorized unless the Susquehanna's plan of reorganization, as finally approved by the court, contain provisions for the unconditional rejection of the 1904 and 1911 contracts and then not until the date of the final consummation of the plan. "This will give the Susquehanna and the Central sufficient time to confer, agree upon, and make effective, on the date of consummation of the plan, appropriate routes, rates, divisions (or charges) applicable to the changed situations, and in case of their inability to agree upon all such matters, to submit the unsettled ones for the determination of the commission shortly after the date of consummation of the plan," he added.

Denver & Rio Grande Western.—Examiner Lucian Jordan has recommended in a proposed report that Division 4 of the Interstate Commerce Commission authorize this road to abandon a narrow-gage line extending from a point near Sapinero, Colo., to a point near Cedar Creek, approximately 27 miles. No passenger service is rendered on the segment and freight trains are operated only as traffic demands. According to the applicant, both Sapinero and

News Department continued on next left-hand page



Security Circulators being installed in 2-8-2 oil-burning locomotives



In modernizing a group of 2-8-2 oil-burning steam locomotives, each is being equipped with five Security Circulators, according to the arrangement shown in the sketch.

The installation of Security Circulators in a locomotive boiler provides additional heating area in the path of the hot gases. This enables the locomotive to get up steam more quickly, increases the water circulation from the side water-legs over the crown sheet, and aids in maintaining maximum boiler output.

AMERICAN ARCH COMPANY, INC.

NEW YORK • CHICAGO

SECURITY CIRCULATOR DIVISION

Cedar Creek, as termini of stub-end branch lines, will continue to receive rail service should the proposed abandonment be approved.

Noting that the line has been operated at a "substantial loss" for several years, the examiner said that its operation must be discontinued unless it is rebuilt at a new location at "considerable expense" to the applicant. "Nothing of record," he added however, "indicates that the suggested new segment could be operated except at a substantial loss . . . While the proposed abandonment would result in some inconvenience to the shippers in the territory, the injury to them would be far less than that imposed upon the applicant. . ."

Division 4 of the Interstate Commerce Commission has **authorized:**

Detroit, Caro & Sandusky.—To abandon a line from Sandusky, Mich., to Peck, 11 miles, operation of which it found has resulted in substantial losses to the applicant during the past three years and now constitutes a "serious threat" to its ability to provide continued service on the remainder of its line.

RAILWAY OFFICERS

EXECUTIVE

John H. Keefe, whose retirement as vice-president, executive department, Atchison, Topeka & Santa Fe at Chicago, was reported in the *Railway Age* of May 8, was born at Raub, Benton county, Ind., on August 20, 1880, and was educated at St. Mary's University, Galveston, Tex. He entered Santa Fe

John H. Keefe

service on November 1, 1896, as an office boy and messenger in the general superintendent's office at Galveston, subsequently serving in various clerical positions and as a stenographer until August 1, 1902, when he was promoted to chief clerk. On September 1, 1905, he was advanced to assistant to the second vice-president and general manager of the system's Gulf Lines, at Galveston, and on May 1, 1911, was promoted to assistant general manager, which position he retained until June 30, 1918. During this period he also served as vice-president and general manager of the Texas & Gulf (part of the Santa Fe system) at Galveston, from April 10, 1906, to July 15, 1910, and as president of the same road from the latter date to November 20, 1914. During the first six months of 1918, Mr. Keefe assisted in the organization of the Division of Operations under federal control, and also served as assistant director of this division of the U. S. Railroad Administration, Washington, D. C., from July 1, 1918, to February 1, 1919, under leave of absence from the Santa Fe. He returned to the Santa Fe as assistant to the vice-president, with headquarters at Chicago, which position he retained until he became president of the Santa Fe Land Improvement Company on February 14, 1921. Mr. Keefe had served as vice-president of Santa Fe since July, 1944.

G. D. Hughey, assistant general manager of the Delaware & Hudson at Albany, N. Y., has been appointed assistant vice-president and general manager.

Fred H. Shaffer, whose promotion to vice-president in charge of operations of the St. Louis-San Francisco, at St. Louis, Mo., was reported in *Railway Age* of May 1, was born on September 30, 1822, at Mattoon, Ill. Mr. Shaffer entered railroad service in 1898 as a telegraph operator with the Cleveland,

Fred H. Shaffer

Cincinnati, Chicago & St. Louis, and advanced later to dispatcher and chief dispatcher. He joined the Atchison, Topeka & Santa Fe in 1906, and from that year until 1911 he served successively as train dispatcher, chief dispatcher and trainmaster at La Junta, Colo. Following some eight years of service with the Fort Worth & Denver City, at Wichita Falls, Tex., Mr. Shaffer went to St. Louis, where he became transportation clerk in the office of the vice-president of the Frisco. In 1920 he was appointed superintendent of the road's eastern division, advancing to assistant general manager in 1925. In the following year he was further promoted to general manager at Springfield, Mo., which post he held at the time of his new appointment.

Ralph G. Richardson, who served as assistant to the vice-president of the Long Island from June 4, 1924, until 1943, when he became special representative on the staff of the vice-president of the New York zone of the Pennsylvania, has retired from the latter position after more than 45 years of service with these two roads. Mr. Richardson will continue to serve as chairman of the Associated Railroads of New Jersey, with headquarters at Pennsylvania station, New York, a post he has held since 1936. **Richard T. Blackson,** supervising agent of the Pennsylvania-Reading Seashore Lines and of the Long Island, succeeds Mr. Richardson as special representative on the vice-president's staff, New York zone of the Pennsylvania.

FINANCIAL LEGAL and ACCOUNTING

Charles C. Kratz has been appointed treasurer and paymaster of the Terminal Railroad Association of St. Louis, at St. Louis, Mo., succeeding the late **V. F. Steinberg.**

L. C. Yates, assistant claim agent in charge of the casualty department of the Norfolk & Western, has been appointed general claim agent, with headquarters at Roanoke, Va., succeeding **Lawrence C. Gardner,** who has retired after more than 43 years of service in the claim department of that road. **John K. Birchfield,** claim adjustor, succeeds Mr. Yates as assistant claim agent. Mr.

L. C. Yates

Yates entered N. & W. service as assistant agent at Shenandoah Junction, W. Va., in April, 1906, and went to Roanoke as a yard clerk a year later. He was promoted to claim adjuster in November, 1910, and was placed in

News Department continued on next left-hand page

Simplified CONTROL of Steam Locomotives

As fast and as dependable as the operating principle of the air brake

THE THROTTLE MASTER

Investigate!

A-1907

AMERICAN THROTTLE COMPANY
INCORPORATED
60 East 42nd Street, New York 17, N. Y.
122 S. Michigan Avenue, Chicago 3, Ill.

charge of the Portsmouth, Ohio, office of the claim department in 1924. Mr. Yates was advanced to assistant claim agent on May 1, 1940.

OPERATING

Charles S. Sanderson, whose appointment as assistant general manager of the Atlantic Coast Line at Wilmington, N. C., was reported in *Railway Age* of March 20, was born at Houlka, Miss., on October 8, 1901, and received his B.S. in civil engineering from Mississippi State College in 1923, Entering railroad service on June 1, 1923, as rodman in the construction department of the Atlantic Coast Line, he became instrumentman in June, 1924, resident engineer in February, 1925, and division engineer in the maintenance of way department in February, 1930. Mr. Sanderson went with the Charleston & Western Carolina in January, 1933, as roadmaster, becoming assistant superintendent in January, 1939. From July, 1942, to September, 1945, as a lieutenant colonel, he was staff officer in charge of railway reconstruction and maintenance, Military Railway Service, 703rd Railway Grand Division, serving 34 months overseas in Africa, Italy, France and Germany. He received the Legion of Merit and the French Croix de Guerre, and was discharged as colonel. Mr. Sanderson returned to the Atlantic Coast Line in October, 1945, as principal assistant engineer, becoming assistant chief engineer in April, 1947, which position he held until his recent promotion.

Samuel Hammer, superintendent of the Missouri Pacific Lines' Missouri and Memphis divisions and of the Missouri-Illinois (part of the M. P. Lines), west of the Mississippi river, with headquarters at Poplar Bluff, Mo., has been promoted to general superintendent, Southern district, with headquarters at Little Rock, Ark. He succeeds **Joseph F. Davis,** who has retired after more than 50 years of railroad service. Mr. Hammer is succeeded at Poplar Bluff by **Henry A. Israel,** assistant superintendent at Nevada, Mo., who in turn is replaced by **Frank R. Woolford,** division engineer at Poplar Bluff.

J. Raymond Brosnan has been appointed trainmaster of the Southern at Columbia, S. C., succeeding **G. Selwyn King.**

The New York Central and the New York, New Haven & Hartford have announced the appointment of **Ernest B. Moorhouse** as manager of Grand Central Terminal, New York, succeeding **J. H. Hustis, Jr.,** retired. Mr. Moorhouse was formerly assistant terminal manager and is succeeded in that position by **C. M. Hull,** assistant to vice-president of the New Haven at New York. **J. D. Carkhuff,** superintendent of the Rochester (N. Y.) division of the New York Central, has been appointed terminal superintendent at New York, as well as superintendent of the Electric, Harlem and Putnam divisions of the New York Central, succeeding **E. L. Golden,** who has been appointed assistant to vice-president of the Central. **Charles E. Crowley** has been appointed manager of the New York Central building at 230 Park Avenue, New York.

Newman J. Evans, assistant superintendent of the Syracuse (N. Y.) division of the New York Central, has been promoted to superintendent of the Rochester (N. Y.) division succeeding **J. D. Carkhuff,** who has been appointed superintendent of the Electric, Harlem and Putnam divisions at New York. A photograph and biography of Mr. Carkhuff appeared in the *Railway Age* of January 31, page 72. **C. F. Grimes,** assistant superintendent at Albany, N. Y., has been transferred to Syracuse. **W. W. Treleaven,** assistant superintendent at Boston, Mass., has been transferred to the Hudson and Mohawk divisions at Albany. **J. F. Nash,** assistant to general manager at Syracuse, has been appointed assistant superintendent of the Boston & Albany at Boston. **S. T. Kieley,** trainmaster at New York, has been appointed assistant to the general manager at Syracuse.

TRAFFIC

David F. McCullough, whose promotion to general freight agent of the Gulf, Mobile & Ohio, at New Orleans, La., was reported in *Railway Age* of May 8, was born on January 18, 1905, at Atlanta, Ga. He began his career with the Southern Freight Association in 1919, subsequently holding various positions dealing principally with freight rate adjustments. In 1934, Mr. McCullough joined the Illinois Central as

David F. McCullough

committee agent at Atlanta, and in 1938 he entered the service of the G. M. & O. He served successively as executive clerk in the freight traffic department at Mobile, Ala., and as chief clerk to the general freight agent at St. Louis, Mo., and New Orleans. Mr. McCullough was promoted in March, 1943, to assistant general freight agent, which post he held at the time of his recent advancement.

Louis J. Smith, Jr., whose promotion to western traffic manager of the Chicago Great Western, with headquarters at San Francisco, Cal., was reported in the *Railway Age* of April 17, was born on March 25, 1906, at Fort Dodge, Iowa. He received his early education in Austin, Minn., and later attended the Ft. Dodge Junior College and Des Moines University's School of Commerce. He began his railroad career with the Great Western as assistant city ticket agent in Des Moines, Iowa, in 1928, advancing to chief clerk to the assistant general freight agent in 1930 and to traffic agent in 1934. Mr. Smith was transferred to Los Angeles, Cal., in 1936, and was promoted to general agent at that point in 1940. He was serving in the latter capacity at the time of his recent promotion.

Herschel E. Quarles, whose promotion to general freight agent of the Gulf, Mobile & Ohio, at Mobile, Ala., was reported in *Railway Age* of May 8, was born on June 3, 1902, at Long Beach, Harrison county, Miss. Mr. Quarles was first employed by the Mobile & Ohio (now G. M. & O.) in 1921, as mail messenger in the auditor's office at Mobile. He subsequently held various clerical positions, advancing in 1930 to chief clerk in the general freight office. He was promoted to assistant general freight agent at Mobile in 1940, which post he held at the time of his recent advancement.

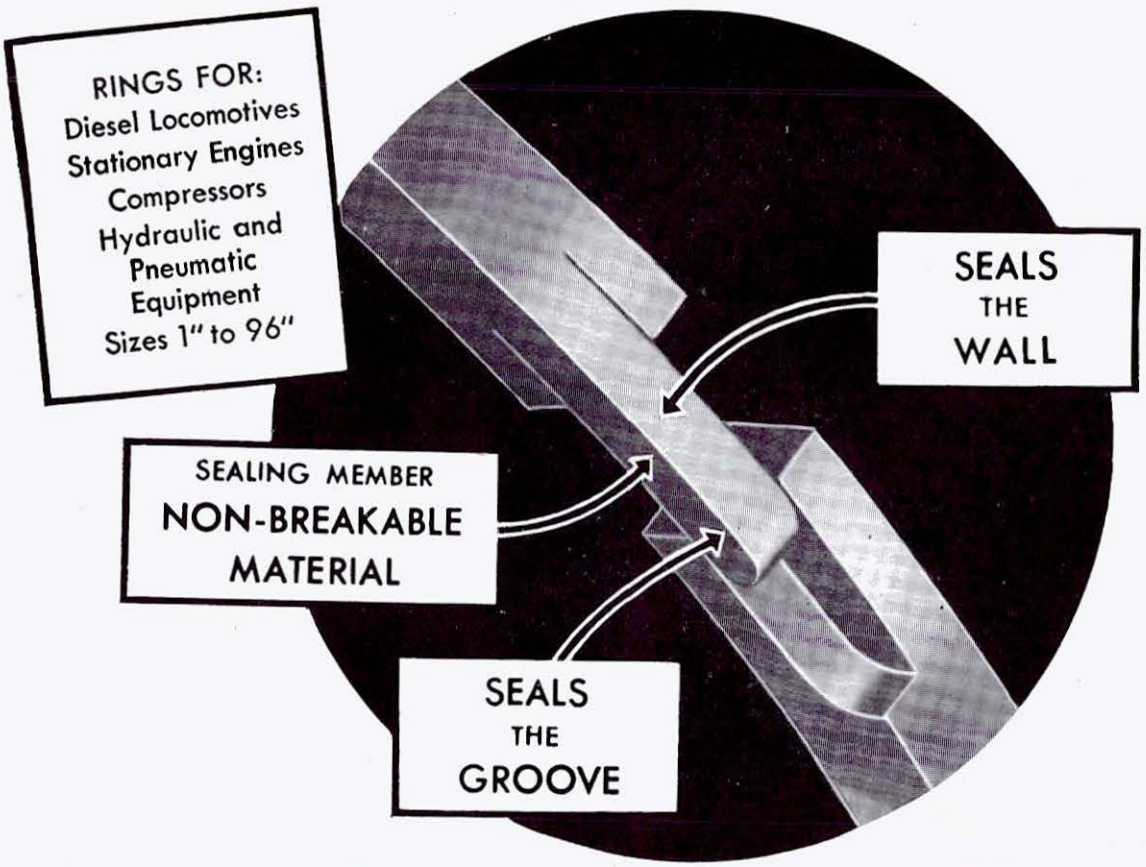
John O. Woodyard, chief service inspector in the freight claim prevention department of the Chicago, Rock Island & Pacific, at Chicago, has been appointed manager of merchandise service at that point.

W. B. Koch has been appointed industrial agent of the Louisville & Nashville, with headquarters at Louisville, Ky.

P. J. Schmidt, division freight agent of the Chicago, Rock Island & Pacific, with headquarters at Hutchinson, Kan., has been promoted to assistant general freight agent at Minneapolis, Minn., succeeding **J. L. Bennett,** who has retired after 45 years of service with the company. Mr. Schmidt is succeeded by **R. J. Dobson,** traveling freight agent at St. Louis, Mo.

R. E. Jamieson, whose promotion to passenger traffic manager of the Chicago South Shore & South Bend, at Chicago, was reported in *Railway Age* of May 15, was born on November 11, 1895, at Burlington, Iowa. He began his railroad career with the Grand Trunk (now part of the Canadian National) at London, Ont., in 1911, and between the years 1912 and 1926 he served with the Canadian Pacific in various positions,

News Department continued on the second left-hand page



Hunt-Spiller Double Seal Rings

THE DIESEL FOREMAN KNOWS THE DIFFERENCE

He appreciates the increased power—the savings of oil—the positive compression which means improved lubrication with minimum carbon formation—and the fact that his engine runs longer between over-hauls with Hunt-Spiller Double Seal rings on the pistons because of their non-breakable alloy sealing member.

THE MASTER MECHANIC KNOWS THE DIFFERENCE

He knows HSGI means less wear. Because Double Seal Piston Rings are precision-machined from Hunt-Spiller AIR FURNACE gun-iron castings, they last longer. He knows that the Hunt-Spiller Double Seal Ring is the only compression-tight Diesel engine sealing ring with the strength of a plain ring.

THE MEN IN THE SHOP KNOW THE DIFFERENCE

They know lower wall pressure and NO BLOW-BY means less cylinder wear and that Double Seal Rings remain free in the grooves, making replacements quick and easy. Because of single-piece construction Hunt-Spiller Double Seal Rings are easy to install.

ALL SIZES AVAILABLE NOW. More than a million rings in stock. Rings made to specifications in 3 to 14 days.

Address all Ring inquiries to
DOUBLE SEAL RING COMPANY
P. O. Box 566-R, Fort Worth 1, Texas

HUNT-SPILLER MFG. CORPORATION

N. C. RAYMOND, *President* E. J. FULLER, *V. P. & Gen. Mgr.*
383 DORCHESTER AVE., BOSTON 27, MASS.
Canadian Licensed Manufacturer, Joseph Robb & Co. Ltd., 4050 Namur St., Montreal 16, P. Q.

Cylinder Bushings	Valve Bull Rings	Dunbar Sectional Type Packing	Light Weight Valves
Cylinder Packing Rings	Crosshead Shoes	Duplex Sectional Type Packing	Cylinder Liners and Pistons
Pistons or Piston Bull Rings	Hub Liners	for Cylinders and Valves	for Diesel Service
Valve Bushings	Shoes and Wedges	(Duplex Springs for Above	Cylinder Snap Rings
Valve Packing Rings	Floating Rod Bushings	Sectional Packing)	Valve Rings, All Shapes

EXPANDING EVIDENCE THAT "UNION"

"UNION" C.T.C.
INSTALLATIONS
IN THE UNITED STATES

C.T.C. SAVES MORE THAN IT COSTS!

"Begin C.T.C." is a welcome sign on every modern railroad because "Union" Centralized Traffic Control has proved its ability to get trains to destinations faster—to increase track capacity—and to cut fuel, man-hour, and equipment waste!

That's why each year railroads install *more* "Union" C.T.C. on *more* miles of track across the nation. Ideally suited to long range planning . . . "Union" C.T.C. can be put in service section-by-section . . . and control can be concentrated at division headquarters. Why not let "Union" engineers show you how C.T.C. can fit *your* railroad's present and future needs?

UNION SWITCH & SIGNAL COMPANY

SWISSVALE PENNSYLVANIA

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

including that of ticket clerk, city passenger agent and traveling passenger agent. Mr. Jamieson joined the South Shore on April 1, 1926, as district passenger agent at South Bend, Ind. He was promoted in 1931 to general passenger agent at Chicago, which post he held at the time of his recent appointment.

Effective on June 10, **Albert P. Claypool** will be general agent in charge of the Great Northern's new freight and passenger traffic office in Atlanta, Ga. He will have supervision over the four-state area of Georgia, South Carolina, Alabama and Florida.

Raymond T. Anderson, assistant general passenger traffic manager of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, has been appointed general passenger traffic manager at that point, succeeding **T. B. Gallaher,** whose death on May 21 was reported in the *Railway Age* of May 29.

A. L. Wolf and **E. G. Huston** have been appointed general agents of the Atlantic Coast Line, with headquarters respectively at Detroit, Mich., and Cincinnati, Ohio.

Frank V. Schaub has been promoted to assistant general passenger agent of the Southern Pacific Lines in Texas and Louisiana, with headquarters at New Orleans, La.

W. C. Rubien has been appointed district passenger agent of the Denver & Rio Grande Western at New York, succeeding **J. A. Salmon,** who has retired on account of illness.

R. A. Caldwell has been appointed general agent of the Atlantic Coast Line, with headquarters at Clewiston, Fla., having jurisdiction over territory between Moore Haven, Fla. and Lake Harbor.

B. D. Anthony, assistant to general manager (real estate and industrial development) of the Delaware & Hudson at Albany, N. Y., has been appointed manager of real estate and industrial development. Mr. Anthony's former title has been abolished.

George N. Page, district agent of the Northern Pacific, with headquarters at Seattle, Wash., has been appointed manager of mail, baggage and express traffic, at St. Paul, Minn., succeeding **Claude H. Goodhue,** who has retired after 52 years of service with the company. Mr. Page is succeeded by **E. P. Reswick** city freight and passenger agent at Seattle.

MECHANICAL

A. I. Anderson, master mechanic of the Northern Pacific, with headquarters at Glendive, Mont., has been promoted to the newly created position of assistant shop superintendent at Livingston, Mont. Mr. Anderson is succeeded by **Raymond Larson,** roundhouse foreman at Glendive.

ENGINEERING and SIGNALING

R. H. Beeder, division engineer of the Atchison, Topeka & Santa Fe's Eastern division, at Emporia, Kan., has been appointed district engineer, Eastern District, Eastern Lines, with headquarters at Topeka, Kan. He succeeds **F. Helm,** who has been appointed district engineer, Western District, Eastern Lines, at Topeka, succeeding **W. A. Kingman,** who in turn goes to Chanute, Kan., as division engineer of the Southern Kansas division. **A. F. Ewert,** formerly at Chanute, has been transferred to Arkansas City, Kan., where he replaces **H. L. Miller,** who has been appointed division engineer at Emporia.

M. M. Stonehouse, supervisor of signals of the Quebec district of the Canadian National, has been appointed superintendent of signals of that district, with headquarters at Quebec, Que. **M. LeBlanc,** leading maintainer, signal department, at Charny, Que., has been appointed supervisor of signals of the Quebec district, succeeding Mr. Stonehouse.

Marion A. Otterbourg, chief signal and electrical inspector of the Southern at Charlotte, N. C., has been appointed signal and electrical superintendent, with the same headquarters, succeeding **T. Nixon Charles,** who has retired after 49 years of service. **Paul E. Snead,** assistant engineer in the signal and electrical department at Washington, D. C., has been appointed chief signal and electrical inspector at Charlotte, to succeed Mr. Otterbourg. Mr. Charles, a native of Tennessee, was born on June 1, 1878, and entered the service of the Southern in April, 1899, as a signal helper at Oakdale, Tenn., and subsequently held positions as signal maintainer, signal foreman and signal supervisor. In 1918, he was promoted to signal and electrical inspector at Cincinnati, Ohio, and became assistant engineer in the signal and electrical department at Washington in 1920. Mr. Charles was promoted to signal and electrical superintendent at Charlotte in February, 1936, which position he held until his retirement.

OBITUARY

Thomas B. Gallaher, general passenger traffic manager of the Atchison, Topeka & Santa Fe, at Chicago, died suddenly at his office in that city on May 21, while conducting a conference, as reported in the *Railway Age* of May 29. Mr. Gallaher had served continuously with the Santa Fe during the past 42 years and had been general passenger traffic manager since April 1, 1946. A native of Graham, Tex., he received his higher education at Texas Christian University, and later was graduated from law school. During school vacations he served as cashier in the local office of the Santa Fe at Weatherford, Tex., until 1906, when he was appointed a clerk at Amarillo, Tex., subsequently serving as traveling auditor. In 1907 he advanced to traveling freight and passenger agent, and, on April 1, 1917, he was promoted to division freight and passenger agent. During federal control of the railroads he was appointed assistant general freight and passenger agent. On July 15, 1920, Mr. Gallaher

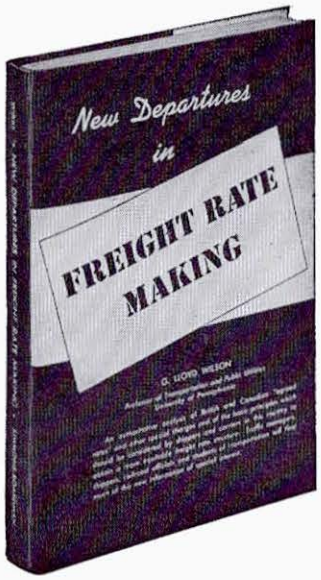
Thomas B. Gallaher

was promoted to general freight and passenger agent, with headquarters at Amarillo, and in August, 1936, he became assistant to the vice-president—traffic, at Chicago. He was promoted to passenger traffic manager in July, 1937, which post he held until his advancement to general passenger traffic manager in 1946. Mr. Gallaher was active in the work of the Association of American Railroads' Committee for the Study of Transportation, served on the executive committee and the Committee for the Development and Improvement in Train Service and Equipment of the American Association of Passenger Traffic Officers and was a member of the Passenger Advisory Committee of the Office of Defense Transportation during World War II. He had also served on the executive committees of the Trans-Continental and Western Passenger Associations.

V. F. Steinberg, treasurer and paymaster of the Terminal Railroad Association of St. Louis, at St. Louis, Mo., died on May 23.

Henry J. Freeman, who retired in 1939 as freight claim agent of the Pennsylvania at Philadelphia, Pa., died on May 29 at his home in Swarthmore, Pa., at the age of 74. Mr. Freeman was chairman of the Freight Claim division of the Association of American Railroads in 1932-1933 and was formerly a chairman of the Eastern Claims Conference.

Four New Railroad Books . . . .



New Departures in
FREIGHT RATE MAKING

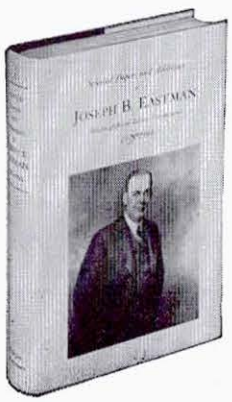
By G. LLOYD WILSON

Professor of Transportation and Public Utilities
University of Pennsylvania

An authoritative analysis of "agreed rates" and other special charges in Great Britain and Canada and of the basic principles worthy of careful consideration by shippers and carriers who seek a more equitable freight rate structure in this country. The author, during the war, was Director of the Division of Rates and Chief Consultant on Rates of the Office of Defense Transportation.

160 pages, tables, forms, index, 6 x 9, $3.00

Selected Papers and Addresses (1942-1944) of
JOSEPH B. EASTMAN



These state papers of one of America's great public administrators, reflect the broad vision and integrity required of a top level public official in wartime. Edited and with an introduction by G. Lloyd Wilson, who was closely associated with the late Director of the Office of Defense Transportation.

381 pages, frontispiece, 6 x 9, $4.00

A Practical Evaluation of
RAILROAD MOTIVE POWER

By P. W. KIEFER

Chief Engineer, Motive Power and Rolling Stock, New York Central

The first book containing authoritative information of the comparative advantages of standard types of railroad motive power—steam, Diesel-electric, and electric. Based upon a study of comparative operating costs made by the New York Central System.

66 pages, illus., tables, charts, 5½ x 8¾, $2.00

FREIGHT RATE APPLICATION

By GLENN L. SHINN

Atty.-Examiner, Interstate Commerce Commission

A practical and convenient reference for interpreting freight tariffs and a comprehensive guide for any student of the subject. Presents clearly and concisely the rules and principles of tariff interpretation which govern the determination of freight rates under Section 6, Paragraph 7, of the Interstate Commerce Act.

160 pages, 2 illus., index, 6 x 9, $3.50

FREE EXAMINATION ORDER FORM

Simmons-Boardman Publishing Corporation
30 Church Street, New York 7, N. Y.

Please send on Ten Days' Free Examination the book or books checked. If not entirely satisfied I will mail them back postpaid. Otherwise I will remit the list price.

☐ Freight Rate Making, $3.00
☐ Joseph B. Eastman, $4.00
☐ Freight Rate Application, $3.50
☐ Railroad Motive Power, $2.00

Name .....

Address .....

City ..... Zone ..... State .....

Company ..... Position .....

(This offer is limited to retail customers in the United States)

R. A. 6-5-48

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM RAILWAYS

Compiled from 127 monthly reports of revenues and expenses representing 131 Class I steam railways

(Switching and Terminal Companies Not Included)

FOR THE MONTH OF MARCH 1948 AND 1947

Item	United States		Eastern District		Southern District		Western District	
	1948	1947	1948	1947	1948	1947	1948	1947
Miles of road operated at close of month	227,216	227,573	53,699	53,731	46,162	46,254	127,355	127,588
Revenues:								
Freight	$642,346,168	$592,294,490	$250,501,958	$228,246,208	$131,508,863	$129,477,158	$260,335,347	$234,571,124
Passenger	74,398,462	71,412,879	37,150,079	35,047,361	13,243,368	13,412,438	24,005,015	22,953,080
Mail	15,530,463	12,111,541	5,455,553	4,743,955	2,805,369	2,141,378	7,269,541	5,226,208
Express	12,822,927	12,505,298	5,086,043	4,309,400	2,257,184	2,502,644	5,479,700	5,693,254
All other operating revenues	31,518,089	30,326,750	14,048,192	13,088,290	5,435,986	5,732,036	12,033,911	11,506,424
Railway operating revenues	776,616,109	718,650,958	312,241,825	285,435,214	155,250,770	153,265,654	309,123,514	279,950,090
Expenses:								
Maintenance of way and structures	104,817,261	91,717,153	37,313,694	32,880,750	23,098,261	20,839,463	44,405,306	37,996,940
Depreciation	10,310,682	10,143,201	4,378,642	4,343,798	1,790,292	1,736,020	4,141,748	4,063,383
Retirements	622,613	200,672	128,988	93,731	102,317	*138,627	391,308	245,568
Deferred maintenance	*380,793	*460,606	*22,229	*43,962	*163,971	*26,816	*194,593	*389,828
Amortization of defense projects	141,991	102,347	11,953	6,412	41,870	29,224	88,168	66,711
Equalization	1,369,200	4,292,422	1,521,824	2,327,164	*881,513	1,072,228	728,889	893,030
All other	92,753,568	77,439,117	31,294,516	26,153,607	22,209,266	18,167,434	39,249,786	33,118,076
Maintenance of equipment	143,176,041	127,117,158	61,047,916	54,450,815	28,861,719	26,335,295	53,266,406	46,331,048
Depreciation	20,161,118	19,225,251	7,911,480	7,866,497	4,478,654	4,156,524	7,770,984	7,202,230
Retirements	*71,088	*40,203	*27,431	*5,086	*17,674	*16,020	*25,983	*19,097
Deferred maintenance and major repairs	*414,619	*405,690	.....	*542	*88,777	*74,342	*325,842	*330,806
Amortization of defense projects	1,227,814	1,249,223	452,345	461,672	240,126	248,679	535,343	538,872
Equalization	501,630	551,980	77,730	70,561	336,891	417,525	87,009	63,894
All other	121,771,186	106,536,597	52,633,792	46,057,713	23,912,499	21,602,929	45,224,895	38,875,955
Traffic	16,089,554	14,511,325	5,385,336	4,898,871	3,637,495	3,101,712	7,066,723	6,510,742
Transportation—Rail line	321,033,359	285,940,228	139,890,457	125,825,907	58,291,183	54,841,655	122,851,719	105,272,666
Miscellaneous operations	10,710,834	10,264,763	4,027,940	3,755,300	1,789,639	1,706,525	4,893,255	4,802,938
General	22,932,296	19,948,013	8,640,367	7,735,651	5,137,553	4,298,726	9,154,376	7,913,636
Railway operating expenses	618,759,345	549,498,640	256,305,710	229,747,294	120,815,850	111,123,376	241,637,785	208,827,970
Net revenue from railway operations	157,856,764	169,152,318	55,936,115	55,887,920	34,434,920	42,142,278	67,485,729	71,122,120
Railway tax accruals	82,163,688	81,991,463	29,044,662	27,128,131	18,131,747	20,742,678	34,987,279	34,120,654
Pay-roll taxes	31,086,977	28,648,740	12,979,142	12,064,627	6,106,300	5,701,782	12,001,535	10,882,331
Federal income taxes	26,104,974	30,272,664	6,686,810	6,193,707	6,809,262	10,202,454	12,608,902	13,876,503
All other taxes	24,971,737	23,070,059	9,378,710	8,869,797	5,216,185	4,838,442	10,376,842	9,361,820
Railway operating income	75,693,076	87,160,855	26,891,453	28,759,789	16,303,173	21,399,600	32,498,450	37,001,466
Equipment rents—Dr. balance	11,592,403	9,741,382	6,003,228	5,260,994	*417,963	*679,960	6,007,138	5,160,348
Joint facilty rent—Dr. balance	3,376,342	3,495,329	1,654,049	1,776,336	527,259	498,086	1,195,034	1,220,907
Net railway operating income	60,724,331	73,924,144	19,234,176	21,722,459	16,193,877	21,581,474	25,296,278	30,620,211
Ratio of expenses to revenues (per cent)	79.7	76.5	82.1	80.4	77.8	72.5	78.2	74.6

FOR THE THREE MONTHS ENDED WITH MARCH 1948 AND 1947

Item	United States		Eastern District		Southern District		Western District	
	1948	1947	1948	1947	1948	1947	1948	1947
Miles of road operated at close of month	227,221	227,573	53,700	53,732	46,157	46,254	127,364	127,587
Revenues:								
Freight	$1,845,601,151	$1,662,113,125	$709,646,253	$633,563,762	$394,969,272	$367,505,684	$740,985,626	$661,043,679
Passenger	227,360,303	224,631,402	115,545,303	110,051,367	39,836,762	41,903,117	71,978,238	72,676,918
Mail	44,729,060	33,876,460	15,795,259	12,681,755	8,123,395	6,081,814	20,810,406	15,112,891
Express	30,040,587	28,745,108	8,695,905	8,841,398	6,074,266	5,652,307	15,270,416	14,251,403
All other operating revenues	95,510,437	91,155,050	42,278,802	40,320,762	16,730,773	16,032,244	36,500,862	34,802,044
Railway operating revenues	2,243,241,538	2,040,521,145	891,961,522	805,459,044	465,734,468	437,175,166	885,545,548	797,886,935
Expenses:								
Maintenance of way and structures	302,303,970	263,241,158	110,799,162	94,220,915	67,437,814	61,372,780	124,066,994	107,647,463
Depreciation	30,907,093	30,358,951	13,133,382	12,976,387	5,355,948	5,203,462	12,417,763	12,179,102
Retirements	1,565,834	1,061,426	340,502	348,937	234,977	161,095	990,355	551,394
Deferred maintenance	*1,118,520	*946,725	*38,362	*114,610	*499,097	*76,494	*580,791	*755,621
Amortization of defense projects	701,058	312,423	36,696	25,842	128,591	87,191	535,771	199,390
Equalization	11,815,681	13,900,778	5,380,209	7,164,331	2,984,912	3,382,497	3,450,560	3,353,950
All other	258,432,824	218,554,305	91,947,005	73,820,028	59,232,483	52,615,029	107,253,336	92,119,248
Maintenance of equipment	417,984,100	372,111,885	178,417,676	160,181,147	84,561,192	76,572,554	155,005,232	135,358,184
Depreciation	59,855,798	56,718,265	23,447,416	22,915,586	13,361,255	12,352,821	23,047,127	21,449,858
Retirements	*399,057	*85,799	*34,432	*12,502	*88,992	*28,312	*275,633	*44,985
Deferred maintenance and major repairs	*1,244,155	*937,353	.....	*2,800	*277,033	*222,738	*967,122	*711,815
Amortization of defense projects	3,722,624	3,759,539	1,355,821	1,407,733	717,715	748,549	1,649,088	1,603,257
Equalization	1,466,082	1,360,508	294,022	197,239	954,323	1,042,913	217,737	120,356
All other	354,582,808	311,296,725	153,354,849	135,675,891	69,893,924	62,679,321	131,334,035	112,941,513
Traffic	46,907,971	41,790,840	15,626,151	14,396,336	10,659,331	8,980,579	20,622,489	18,413,925
Transportation—Rail line	953,859,649	831,351,503	411,701,486	365,446,907	179,249,084	158,790,602	362,909,079	307,113,994
Miscellaneous operations	33,030,093	30,949,315	12,535,102	11,436,902	5,533,445	5,007,579	14,961,546	14,504,834
General	66,884,762	58,706,845	25,504,512	22,693,182	14,575,747	12,640,809	26,804,503	23,372,854
Railway operating expenses	1,820,970,545	1,598,151,546	754,584,089	668,375,389	362,016,613	323,364,903	704,369,843	606,411,254
Net revenue from railway operations	422,270,993	442,369,599	137,377,433	137,083,655	103,717,855	113,810,263	181,175,705	191,475,681
Railway tax accruals	237,223,188	227,004,985	83,341,419	76,076,913	55,025,086	56,873,051	98,856,683	94,055,021
Pay-roll taxes	91,874,086	84,011,042	38,534,997	35,295,372	18,143,642	16,653,731	35,195,447	32,061,939
Federal income taxes	71,337,602	75,004,885	17,364,056	14,484,664	21,154,900	25,791,868	32,818,646	34,728,353
All other taxes	74,011,500	67,989,058	27,442,366	26,296,877	15,726,544	14,427,452	30,842,590	27,264,729
Railway operating income	185,047,805	215,364,614	54,036,014	61,006,742	48,692,769	56,937,212	82,319,022	97,420,660
Equipment rents—Dr. balance	32,026,329	28,616,698	16,343,042	14,778,975	*2,881,440	*1,220,811	18,564,727	15,058,534
Joint facility rent—Dr. balance	10,374,896	10,503,981	4,920,325	5,077,816	1,575,060	1,691,012	3,879,511	3,735,153
Net railway operating income	142,646,580	176,243,935	32,772,647	41,149,951	49,999,149	56,467,011	59,874,784	78,626,973
Ratio of expenses to revenues (per cent)	81.2	78.3	84.6	83.0	77.7	74.0	79.5	76.0

*Decrease, deficit, or other reverse items.

Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to Revision.

Current Publications

BOOKS

Filling Systems for Engineering Offices, issued by the Engineering Societies Library, 29 W. 39 st., New York 18. Price, $2.

This is the first of a series of bibliographies to be issued by the Engineering Societies Library. It is a selected list of 41 references to books and articles on systems for the filing of notes, correspondence, abstracts, reprints, drawings, maps, catalogs, etc. Some of the articles describe general filing systems, while others refer specifically to the various fields of engineering. An annotation summarizes the important features of each article.

A New Chapter of Erie, by Henry S. Sturgis. 64 pages. Issued by the Erie Railroad Company, Midland Building, Cleveland 15, O.

Erie Railroad, reorganized four times in its colorful history, emerged from the courts the last time on December 22, 1941, after slightly less than four years of proceedings under section 77 of the Bankruptcy Act. The speed of the reorganization, the plan adopted, the procedures followed, and developments since the reorganization are the themes discussed in this little book.

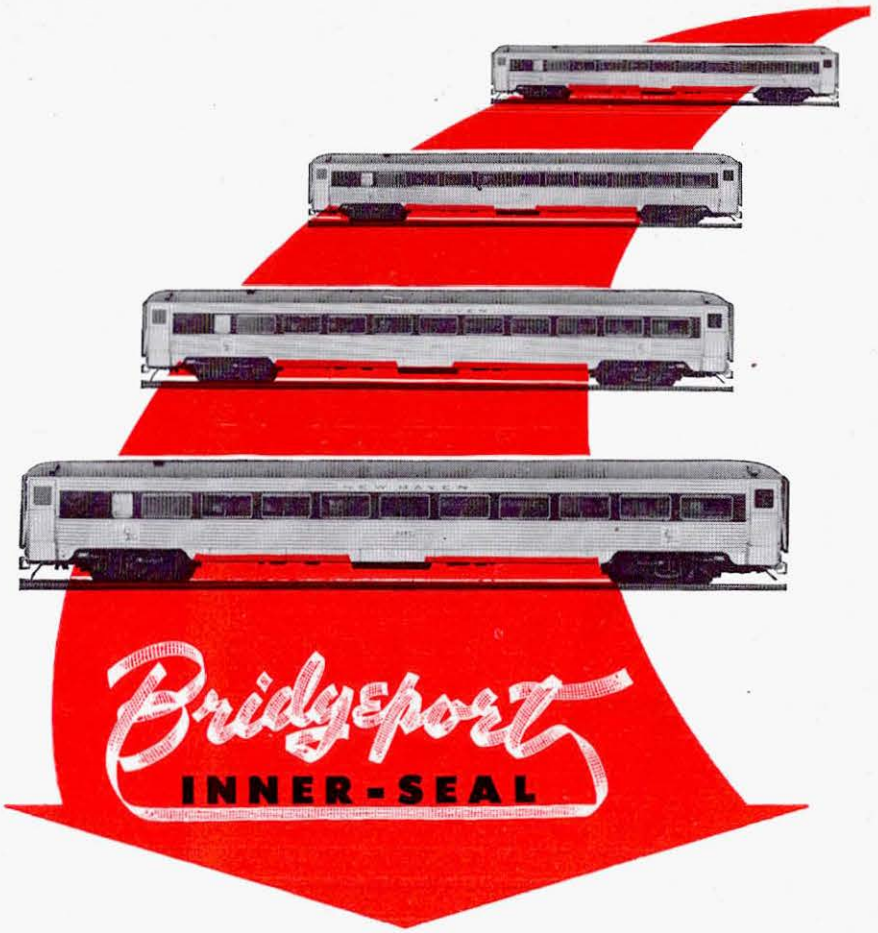
ARTICLES IN PERIODICALS

The Misinformed Employee, by Ross G. Walker. Harvard Business Review, May, 1948, pps. 267-281. Published by the Graduate School of Business Administration, Harvard University. Address requests to Harvard Business Review, Gallatin House, Soldiers Field, Boston 63, Mass. Single copies, $1.50.

Mr. Walker contends that new thinking is needed in the entire concept of labor-management relations. He says that management's attempts to inform employees must not be paternalistic, and he suggests worker participation in company affairs at a major management level as a means of giving the employee the security and understanding he needs to cooperate intelligently with management. He discusses ways of accomplishing this worker participation and cites examples.

Railroads as Investments. Railway Progress, April, 1948, pp. 3-22. Published by the Federation for Railway Progress, P. O. Box 6539, Terminal Tower, Cleveland 1, Ohio.

This is the first "one-subject" issue of Railway Progress. It contains the following articles: Senior Securities on the Arteries of Commerce—Railroad Bonds, by C. S. Iverson; Railroad Common Stocks as Investments, by G. M. Loeb; The Stockholder Has a Share in Economic Democracy, by Lewis D. Gilbert; and Some Annual Reports Say: Stop, Look and Listen!, by Weston Smith. The first two discuss bonds and stocks as media of investments, particularly in the light of present-day railroad conditions; the third discusses the shareholders' rights; and the fourth, the improvements in annual reports in recent years.

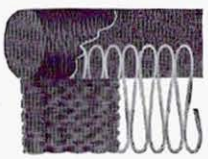


WEATHERSTRIPS 103 MODERN DELUXE COACHES

Built by Pullman-Standard for the New Haven

Bridgeport Inner-Seal—the weatherstrip that has no equal—is among the latest developments contributing to increased passenger comfort on the New Haven's 103 new streamlined coaches. Providing airtight end door sealing, Inner-Seal plays a vital role in maintaining optimum air conditioning. Its unique design, a live sponge rubber bead vulcanized for life to a woven flange of tough spring steel wire and strong cotton thread, makes Inner-Seal unusually flexible and resilient. It molds itself into every crevice to seal out drafts, grime, dampness, and noise. Inner-Seal is easily installed, even around sharp angles and compound curves. And, for applications such as this, Inner-Seal may be coated with neoprene which is highly resistant to abrasion, sunlight, oil, and extreme temperature variation.

Inner-Seal is made in many standard sizes and colors or may be modified especially for your requirements. Write today for samples and data sheet giving complete information.

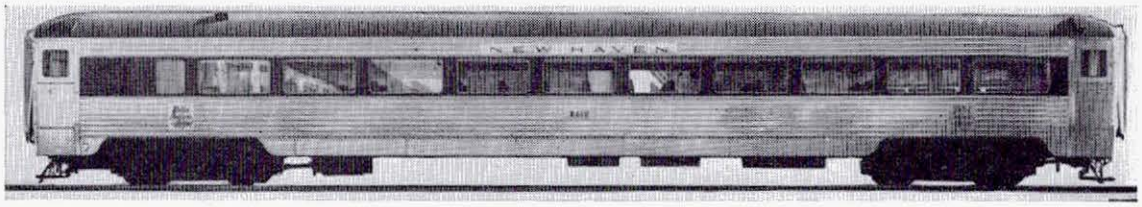


Tough spring steel wire molded for life into live sponge rubber

Bridgeport FABRICS, INC.
BRIDGEPORT 1, CONN.
Est. 1837

Represented in Canada by
The Holden Co., Ltd., Montreal, Toronto, Winnipeg, Vancouver, B. C.

TUCO Products on New Haven's New Cars



The floors in these modern coaches and special feature cars are laid with TUCOLITH light weight type LW-37 composition.

TUCOLOTH type AB is being laid in the kitchens, pantries, grills and buffet sections of the special feature cars.

DOREX Activated Carbon Air Recovery Panels insure fresh ventilation air in these up-to-date passenger cars.

Tuco Products Corp., 30 Church St., New York 7 122 So. Michigan Ave., Chicago 3

ALUMILASTIC

THE ELASTIC METALLIC COMPOUND

TRADE MARK

THE JOINTS AND LAP JOINTS OF THE MODERN DELUXE NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COACHES ARE THOROUGHLY SEALED AND WELL PROTECTED WITH ALUMILASTIC

THE PARR PAINT & COLOR COMPANY **CLEVELAND 10, OHIO**

WHO'S WHO IN RAILROADING

in North America

The Eleventh Edition of this standard authority on railroad officials has been brought up to date since the last edition. More than 3,000 of the biographical sketches have been revised and 2,000 new ones added.

Railway officers, officials of railway equipment companies, members of federal and state regulatory commissions, Interstate Commerce Commission practitioners, transportation economists, professors of transportation, editors of railroad magazine and leaders of railroad unions are included. Much personal information in addition to the highlights of their business or professional careers, is given.

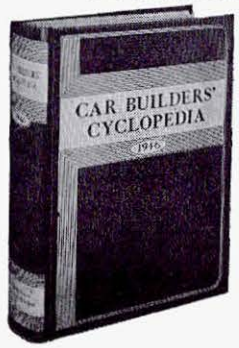
780 pages, 6 x 9, cloth, $8.50.

Book Department

SIMMONS-BOARDMAN PUBLISHING CORPORATION

30 Church Street **New York 7, N. Y.**

CAR BUILDERS' CYCLOPEDIA of American Practice



Editor, ROY V. WRIGHT
Editor, Railway Mechanical Engineer

Since 1879 this book has been recognized as the standard authority wherever American built rolling stock is in use. The Seventeenth Edition was thoroughly revised.

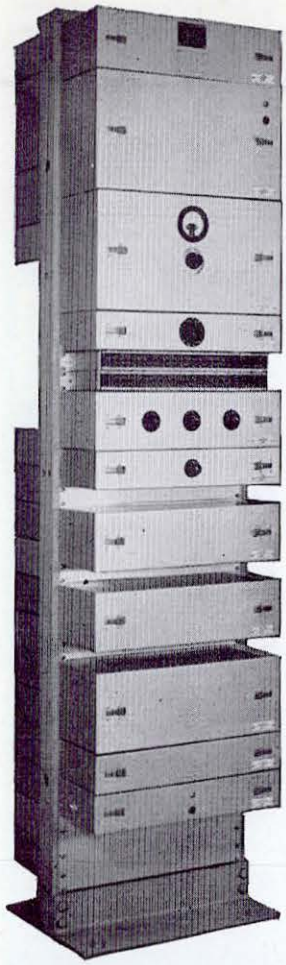
Twenty-One Sections

Dictionary of Car Terms—Freight Train Cars—Freight Car Construction—Railway Service Cars—Passenger Train Cars—Motor Cars and Trains—Passenger Car Construction and Equipment—Lighting and Air Conditioning—Heating and Ventilation—Couplers and Draft Gears—Air Brakes—Brake Gear—Safety Appliances—Car Trucks—Journal Boxes; Roller Bearings; Lubrication—Industrial and Mine Cars—Export Cars—Car Materials and Supplies—Car Operation—Car Shops and Repair Yards—Indexes. 1946. 17th. 1,444 pages, 3,000 illus., 8x12, Fabrikoid, $6.00

Send for Your Copy Today

SIMMONS-BOARDMAN PUBLISHING CORP.

30 Church Street **New York 7, N. Y.**



New!
3½ CHANNELS
Lenkurt
32 CARRIER

Now, Lenkurt brings you an extra half channel in spectrum space never before available. Space for nine teletype, telegraph, or signaling sub-channels. Type 32 Carrier also has all-electronic pilot regulation against attenuation and twist—fast action; no motors, contacts or other moving parts. Get data.

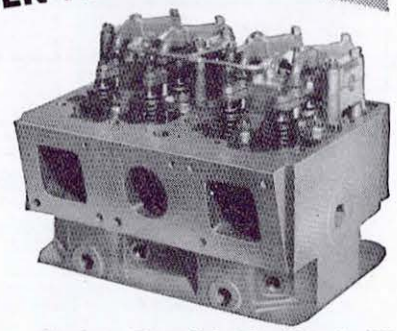
LENKURT ELECTRIC CO.
SAN CARLOS, CALIFORNIA

LENKURT Knows How

Increase **Power and Fuel Economy**
with MOONEY Quad-Valve CYLINDER HEADS

Designed to fit the following rail car engines:

Brill Model 660
Brill Model 860
Winton Model 120
Winton Model 146
Winton Model 148



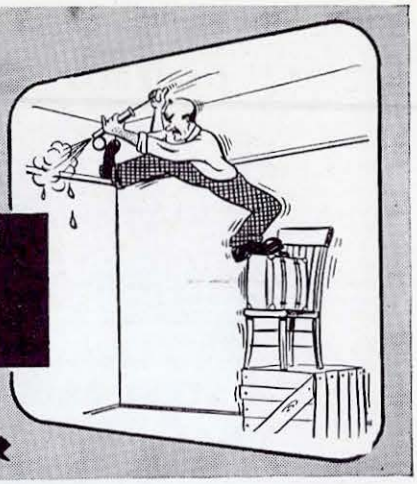
Showing a "Mooney" Head for Winton No. 120

"MOONEY" QUAD-VALVE CYLINDER HEADS provide forced water circulation directly against and around valve seats to maintain a constant temperature. This increases power and effects fuel economy. Also, a special formula metal is used which resists wear and corrosion. Reduces maintenance costs by giving you more mileage per overhaul.

Write for complete details.

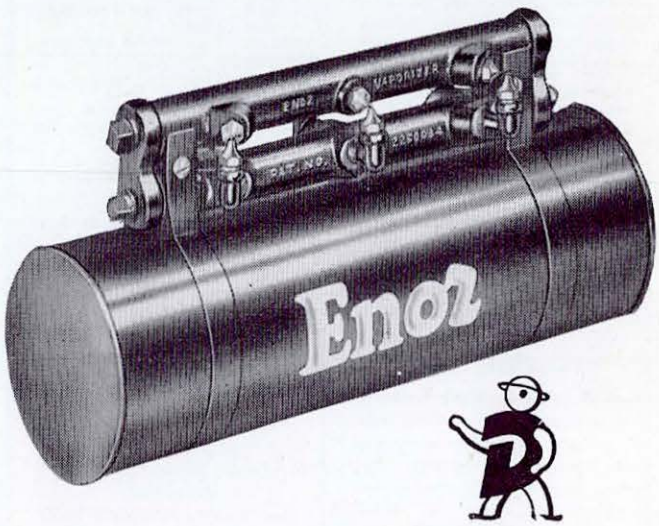
AUTO ENGINE WORKS, Inc.
349 N. HAMLINE AVE. ST. PAUL, MINN.

Of course



THERE'S AN EASIER WAY!

Enoz SYSTEM OF MODERN INSECT CONTROL



Are you wasting man-hours with horse-and-buggy methods? Try the modern, Enoz way to help protect your plant against costly insect life. Enoz Insecticides—safe, sure, fast and economical—vaporized into every corner of your plant by the patented Enoz Vaporizer help you control flies, roaches, confused flour beetles, meal moths, saw-tooth grain beetles and flat grain beetles. The Enoz Vaporizer is supplied without extra charge for your individual use. For all their lethal qualities against insects, Enoz Insecticides are non-toxic to human beings when used as directed. They are likewise harmless to equipment, utensils, containers and machinery.

Write today for a free 10 minute demonstration.

ENOZ
DEPARTMENT
THE DIVERSEY CORPORATION
53 W. JACKSON BLVD., CHICAGO 4, ILLINOIS

Advertisers

IN THIS ISSUE

Adams & Westlake Company, The 33
American Arch Company 89
American Brake Shoe Company, Brake Shoe and Castings Division 4, 5
American Locomotive Company 20, 21
American Steel Foundries 15
American Throttle Company, Inc. 91
Armco Steel Corporation 19
Association of Manufacturers of Chilled Car Wheels 2
Auto Engine Works, Inc. 101

Baldwin Locomotive Works, The Standard Steel Works Division 10
Bethlehem Steel Company 3
Bridgeport Fabrics, Inc. 99
Buckeye Steel Castings Company 11

California Company 39
California Oil Company, The 39
Carey Co., Inc., Thomas F. 102
Classified Advertisements 102
Commercial Metals Co. 102

Darien Corp. 102
Dearborn Chemical Company 31
Differential Steel Car Company 103
Diversey Corporation, The 101
Dow Chemical Company, The 18

Electric Storage Battery Company, The 27

Fabreeka Products Company, Inc. 24
Fafnir Bearing Company, The 28
Formica 32
Franklin Railway Supply Company 87

General Electric Company 20, 21, 35
General Railway Signal Co. .....Back Cover
General Steel Castings 23
Get Together Department 102
Gold Car Heating & Light Co. 103
Goodall Fabrics, Inc. 12
Gunite Concrete & Construction Co. 103

Haskelite Manufacturing Corporation 34
Heywood-Wakefield 37
Hooper & Sons Co., Wm. E. 6
Hooven, Owens, Rentschler Co. 85
Hunt Company, Robert W. 102
Hunt-Spiller Mfg. Corp. 93
Hyman-Michaels Company 103

International Correspondence Schools 102
Iron & Steel Products, Inc. 102

Johns-Manville 14

Karen Co., The 102

Lenkurt Electric Co. 101
Lima-Hamilton Corporation 85
Lima Locomotive Division, Lima Shovel & Crane Division 85
Lovell-Dressel Co. Inc. 16
Luminator Inc. 36

McConway & Torley Corporation 26

National Pneumatic Company 13
New York, New Haven and Hartford R.R. 7
Niles Tool Works Co. 85

Ohio Locomotive Crane Co., The 102
Okonite Company, The 44

Pantosote Company, The 17
Parr Paint & Color Company, The 100
Pullman Standard Car Mfg. Co. 8, 9
Purdy Company, The 103

Railway Educational Bureau, The 102
Ryerson & Son, Inc., Joseph T. 104

Safety Car Heating and Lighting Co. 25
Scullin Steel Co. 30
Simmons-Boardman Pub. Corp. ...97, 100, 103
Standard of California 39
Standard Oil Company of Texas 39
Standard Steel Works Division, Baldwin Locomotive Works 10
Symington-Gould Corporation, The ..... Inside Back Cover

Tuco Products, Inc. 100

Union Pacific Railroad 38
United States Envelope Company 29
Union Switch & Signal Co. 42, 94, 95

Van der Horst Corp. of America 22

Wallack Bros. 102
Westinghouse Air Brake Co. 40
Wine Railway Appliance Co., The ..Front Cover

Among the 2,000,000 or more visitors expected at the Railroad Fair in Chicago this summer will be thousands of railway officers from all over the country.

For these men *Railway Age* will provide in its July 24 issue, the Railroad Fair Number, a guide book and handy reference on all Fair activities.

—And for thousands more, unable to attend, this issue will paint a vivid picture of the Fair and highlight its significance as a milestone in railway progress.

A complete schedule of events will be included. An entire article will be devoted to the gigantic pageant dramatizing transportation progress from the Indian canoes of 1673 to the modern streamliners of today. In addition, the modern passenger trains which will succeed one another in the constantly-changing track exhibit will be listed, and the special exhibits of individual railroads will be featured. Such joint and individual exhibits as the railway supply industry decides to include will also be extensively described and illustrated.

As background for this momentous railroad show the editorial staff of *Railway Age* will review the steady advance of the science of railroading, especially as marked by the advance in the physical tools of doing business—in which, of course, manufacturers have played a major role.

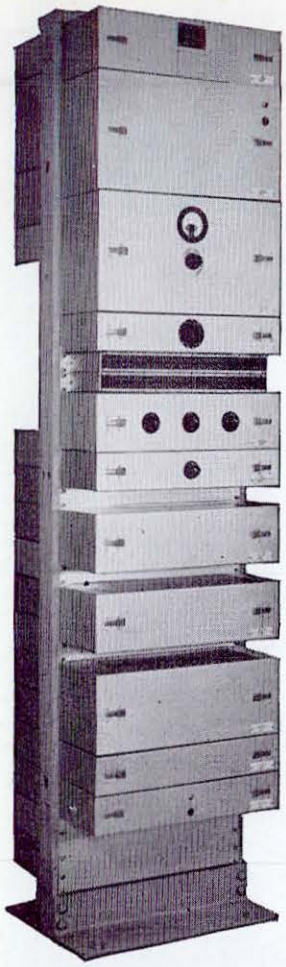
That's why the Railroad Fair Number offers manufacturers such an exceptional opportunity—first to support the railways in this greatest of all railway shows and then to tie in with the whole panorama of railway progress, focusing attention on individual product exhibits which will not be otherwise identified.

STEEL *in stock at* **RYERSON**

• Ryerson has the steel you need ready for immediate shipment. Twelve convenient Ryerson plants stock more than ten thousand kinds, shapes and sizes of steel and allied products. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City, Pittsburgh, Los Angeles.

Principal Products Include:

Structurals	Alloys	Mechanical Tubing	Reinforcing
Plates	Cold Finished Steel	Boiler Tubes	Nails, Rivets, etc.
Sheets	Tool-Steel	Welding Rod	Machinery
Strip	Stainless	Babbitt, Solder	Tools



New!
3½ CHANNELS
Lenkurt
32 CARRIER

Now, Lenkurt brings you an extra half channel in spectrum space never before available. Space for nine teletype, telegraph, or signaling sub-channels. Type 32 Carrier also has all-electronic pilot regulation against attenuation and twist—fast action; no motors, contacts or other moving parts. Get data.

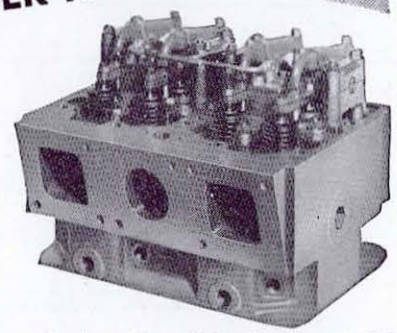
LENKURT ELECTRIC CO.
SAN CARLOS, CALIFORNIA

LENKURT Knows How

Increase **Power and Fuel Economy**
with MOONEY Quad-Valve CYLINDER HEADS

Designed to fit the following rail car engines:

Brill Model 660
Brill Model 860
Winton Model 120
Winton Model 146
Winton Model 148



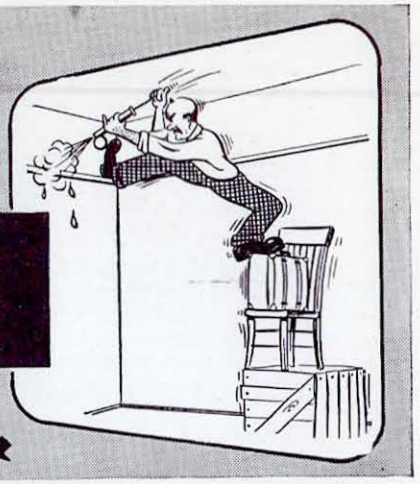
Showing a "Mooney" Head for Winton No. 120

"MOONEY" QUAD-VALVE CYLINDER HEADS provide forced water circulation directly against and around valve seats to maintain a constant temperature. This increases power and effects fuel economy. Also, a special formula metal is used which resists wear and corrosion. Reduces maintenance costs by giving you more mileage per overhaul.

Write for complete details.

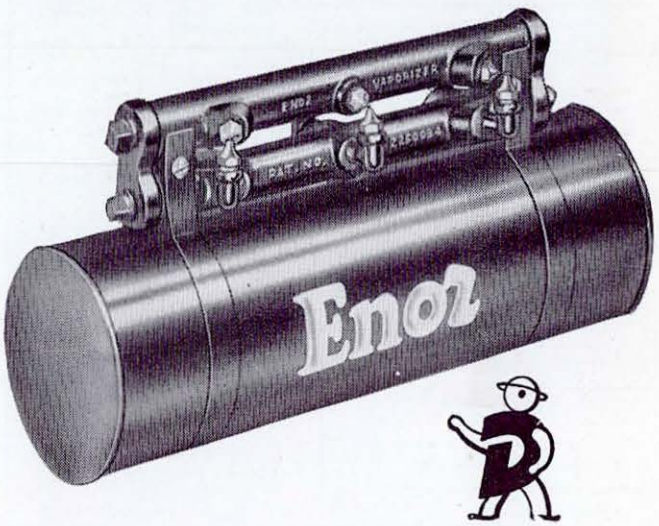
AUTO ENGINE WORKS, Inc.
349 N. HAMLINE AVE. ST. PAUL, MINN.

Of course



THERE'S AN EASIER WAY!

Enoz SYSTEM OF MODERN INSECT CONTROL



Are you wasting man-hours with horse-and-buggy methods? Try the modern, Enoz way to help protect your plant against costly insect life. Enoz Insecticides—safe, sure, fast and economical—vaporized into every corner of your plant by the patented Enoz Vaporizer help you control flies, roaches, confused flour beetles, meal moths, saw-tooth grain beetles and flat grain beetles. The Enoz Vaporizer is supplied without extra charge for your individual use. For all their lethal qualities against insects, Enoz Insecticides are non-toxic to human beings when used as directed. They are likewise harmless to equipment, utensils, containers and machinery.

Write today for a free 10 minute demonstration.

ENOZ
DEPARTMENT
THE DIVERSEY CORPORATION
53 W. JACKSON BLVD., CHICAGO 4, ILLINOIS

GET TOGETHER DEPARTMENT

SPECIAL OFFERING
LOCOMOTIVES
STANDARD GAUGE

1—10-Ton, 0-4-0, Whitcomb Gasoline.
2—12-Ton, 0-4-0, Plymouth Gasoline.
1—20-Ton, 0-4-0, Whitcomb Gasoline.
1—20-Ton Plymouth.
1—44-Ton, 360 H.P. G.E. Diesel-Electric, New 1940, ICC Condition, 4 Motor Drive Caterpillar Engines T/E 27280 lbs.
1—45-Ton, G.E. Diesel-Electric.
2—45-Ton, Plymouth Diesel-Electric.
1—65-Ton Vulcan, 400 H.P., 0-4-4-0, Diesel-Electric, New 1941, T. E. 39,000 lbs.
1—83-Ton, 2-6-2, Saddle Tank, Oil-Fired Steam. A REAL BUY.
1—87-Ton, 600 H.P. Diesel-Electric, Twin Unit Type. Can Be Operated As 2 Units 87-Ton, Or As 2 Separate 43½-Ton Units.
In Good Operating Condition

Available for immediate delivery

IRON & STEEL PRODUCTS, INC.
43 Years' Experience
13486 S. Brainard Ave., Chicago 33, Ill.
Bayport 3456
"ANYTHING containing IRON or STEEL"

FREIGHT CARS

12—Gondola, Steel, 50-Ton, 41 Ft.
4—Gondola, Composite, 50-Ton, 48-Ft.
12—Gondola, All Steel, 50-Ton, 40-Ft. 6 In., Drop Door.
18—Gondola, Composite, 50-Ton, 41-Ft.
24—Hopper, Twin, Steel, 50-Ton.
2—Hopper, Covered, 30-Ton Equipped with Fuller-Type Outlet Valves.
31—Box, 40-Ton, 40 Ft., Single and Double Sheathed.
5—Caboose, 8-Wheel, Steel Sills.
7—Box, 50-Ton, 50-Ft. All Steel.
8—Ore Hopper Cars, Steel, Cross Dump, 50-Ton.
17—Flat, 40- and 50-Ton, 33- to 48-Ft.
8—Flat, 40-Ton, 60-Ft.
9—Flat, 50-Ton, 58-Ft.
1—Tank, 3665 Gals., Class II, Non-Coiled.
4—Tank, Class II, 8,000-Gals., Non-Coiled.
2—Tank, Class II, 8,000 Gals., Coiled.
8—Tank, Class II, 7,850 Gals., Non-Coiled.
42—Dump, 20-Yd. Automatic Air.
31—Dump, 30-Yd., Automatic Air.

Available for immediate delivery

IRON & STEEL PRODUCTS, INC.
43 Years' Experience
13486 S. Brainard Ave., Chicago 33, Ill.
Bayport 3456
"ANYTHING containing IRON or STEEL"

POSITION OPEN

Position open as Field Engineer with company manufacturing wide line of locomotive steam accessories and lubrication equipment. Require man with comprehensive knowledge of steam and diesel locomotives, preferably with design experience. A knowledge of lubrication methods is essential. Applicants must have pleasant and tactful personality and be willing to travel. Address Box 932, RAILWAY AGE, 30 Church St., New York 7, N. Y.

Robert W. Hunt Company
ENGINEERS
Inspection—Tests—Consultation
All Railway Equipment
Structures and Materials
General Office:
175 W. Jackson Boulevard
CHICAGO
New York-Pittsburgh-St. Louis

REPRESENTATION

Sales Representative with long and successful experience selling Eastern railroad mechanical and purchasing departments is available for additional accounts on commission basis. Address Box 933, RAILWAY AGE, 30 Church St., New York 7, N. Y.

FOR SALE
New R.R. Gauge (Tie) Rods
Large Quantity—Meter and Narrow Gauge
THE KAREN CO.
2107 N. 6th St. Harrisburg, Pa.

FOR SALE

1—Brill gas-elec. combination rail motor car
2—45-ton G.E. 300 HP diesel electric locomotives
Thomas F. Carey Co., Inc.
120 Liberty Street
New York 6, N. Y.

DIESEL LOCOMOTIVES

80 TON WHITCOMB
1—45 TON WHITCOMB
2—65 TON WHITCOMB
1—20 & 1—25 TON G. E.
DARIEN CORP
60 E. 42nd St., N. Y. 17, N. Y.

RAILROAD EDUCATIONAL SERVICE

For 45 years the Railroad Department — International Correspondence Schools — has been training ambitious railroad men the technique of their work. Nearly 300 railroads have agreements with the International Correspondence Schools to instruct their employees who are interested in technical training at reduced rates.

Courses In:
Railroad Apprentice Training
Air Brakes
Locomotive Firemen
Locomotive Engineers
Car and Locomotive Shop Work
Traffic Management
Accounting—Rate Clerk
Maintenance of Way
Transportation Salesmanship
Signal Work
Telephony and Telegraphy

We Specialize in Railroad Apprentice Technical Training Courses Covering the Work Done by Each Craft.

Free Booklet on Request

INTERNATIONAL CORRESPONDENCE SCHOOLS
Railroad Department
Box 8816 SCRANTON, PA.

BUY
BONDS

Educational Services for RAILROAD MEN

Our New Service
on
Diesel Locomotive
Operation
is highly recommended
for
Engineers and Firemen

The Railway Educational Bureau
Omaha 2, Nebraska

WANTED
PIPE and TUBING
WALLACK BROS.
7400 S. Damen Ave.
Chicago 36, Ill.

FOR
INDEX
TO
ADVERTISERS
SEE LAST
WHITE PAGE

AVAILABLE IMMEDIATELY

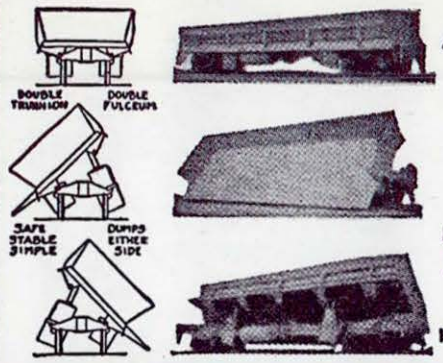
A COMPLETE STOCK OF
FIRST-CLASS RELAYING
RAILS AND ACCESSORIES

Listed Below Are A Few Of
The Items We Have In Inventory

800 Tons	60 LB	ASCE SECTION
1625 Tons	75 LB	ASCE SECTION
900 Tons	85 LB	ASCE SECTION
100 Tons	100 LB	AREA SECTION
10,000 Tons	110 LB	AREA SECTION
2000 Tons	112 LB	AREA SECTION

100,000 Pcs. TIE PLATES FOR 85-90 LB RAIL

Commercial Metals Co. Box 1046, Dallas, Texas



AIR DUMP CARS

RAIL CARS
MINE CARS
AND
LOCOMOTIVES
AXLESS TRAINS
COMPLETE
HAULAGE SYSTEMS

DIFFERENTIAL STEEL CAR CO.
FINDLAY, OHIO

HYMAN-MICHAELS COMPANY

Relaying Rails ★★★ **Dismantling**

Used railroad equipment—cars—locomotives
Freight Car Replacement Parts

Complete stocks of guaranteed used freight car parts carried on hand by us at all times. Located conveniently for shipment to any part of country. Write — Phone — Wire — when interested in used Rails, Equipment, Cars, Car or Track Dismantling, or Car Parts.

Main Office
122 SOUTH MICHIGAN AVENUE
CHICAGO, ILLINOIS

Branches

New York	San Francisco	Houston
St. Louis	Los Angeles	Havana, Cuba
SERVICE	QUALITY	RELIABILITY

RAILROAD EQUIPMENT
CARS—LOCOMOTIVES
REPAIR PARTS

RELAYING RAILS

STEEL STORAGE TANKS
6000—8000—10000 gal. cap.
CLEANED AND TESTED

THE PURDY COMPANY
122 S. Michigan Avenue Chicago 3, Illinois

"GUNITE" CONCRETE

(Since 1915)
(CALLED "SHOTCRETE" BY RAILROADS)
Detail Information — Specifications on Request
GUNITE CONCRETE & CONSTRUCTION CO.
ENGINEERS CEMENT GUN SPECIALISTS CONTRACTORS
1301 Woodswether Road Kansas City 6, Missouri
District Branch Office—228 N. LaSalle, Chicago 1, Ill.
Branch Offices—Dallas, Denver, Houston, New Orleans, St. Louis

GOLD
CAR HEATING SPECIALTIES OF QUALITY
★ STEAM
★ VAPOR
★ ELECTRIC
GOLD CAR HEATING & LIGHTING CO.
33-35TH STREET, BROOKLYN 32, N.Y.

A Practical Evaluation of

Railroad Motive Power

By P. W. KIEFER
Chief Engineer, Motive Power and Rolling Stock, New York Central System

The first authoritative information in book form of the comparative advantages of standard types of railroad motive power—steam, Diesel-electric, and electric. Based upon the results of a study made by the New York Central System of comparative operating costs of all three types on main line divisions.

Contents
Foreword—Introduction—The Reciprocating-Type Steam Locomotive—Other Coal-Fired Steam Locomotives—The Gas-Turbine Locomotive—Electric Locomotives—Diesel-Electric Locomotives—Motive Power Potentialities—Conclusions.

1948. 66 pages, illus., tables, charts, 5½x8¾, cloth, $2

☆

The Steam Locomotive

By RALPH P. JOHNSON
Chief Engineer, The Baldwin Locomotive Works

An authoritative treatise on the theory, operation and economics of the steam locomotive which includes comparisons with Diesel-electric locomotives. The subject matter is stripped down to fundamentals. Enough background is included to indicate paths of development.

1944. 2nd. 550 pages, 90 illus., 75 tables, 6 x 9, $5.00

☆

Shop Hints on
Locomotive Valve Setting

By JACK BRITTON

In natural sequence and with the aid of simple drawings, without puzzling mathematical formula, the author, a former apprentice instructor, shows how to follow through on most any valve setting job. Covers Stephenson link motion, Walschaert, Baker, Young, and Joy valve gears, and the Gresley lever arrangement. Takes the mystery out of valve setting.

2nd. 350 pages, 210 illus., 5 x 8, $3.00

☆

4-6-4 Locomotive and Tender Chart

Shows 315 numbered parts including all the latest equipment on a Hudson type passenger locomotive. Scaled elevation and four cross-sectional drawings.

40 x 30 inches, folded to 9½ x 12, $.50

Simmons-Boardman Publishing Corporation
30 Church Street, New York 7, N. Y.

Please send me on Ten Day's Free Examination the book (s) and/chart checked below. If not satisfactory I will mail them back postpaid. Otherwise I will remit their list price.

☐ Railroad Motive Power, $2 ☐ The Steam Locomotive, $5
☐ Locomotive Valve Setting, $3 ☐ Locomotive and Tender Chart, $.50

Name .....

Address .....

City ..... Zone ..... State .....

Company ..... Position .....

6-5-48

Advertisers

IN THIS ISSUE

Adams & Westlake Company, The 33
American Arch Company 89
American Brake Shoe Company, Brake Shoe and Castings Division 4, 5
American Locomotive Company 20, 21
American Steel Foundries 15
American Throttle Company, Inc. 91
Armco Steel Corporation 19
Association of Manufacturers of Chilled Car Wheels 2
Auto Engine Works, Inc. 101

Baldwin Locomotive Works, The Standard Steel Works Division 10
Bethlehem Steel Company 3
Bridgeport Fabrics, Inc. 99
Buckeye Steel Castings Company 11

California Company 39
California Oil Company, The 39
Carey Co., Inc., Thomas F. 102
Classified Advertisements 102
Commercial Metals Co. 102

Darien Corp. 102
Dearborn Chemical Company 3T
Differential Steel Car Company 103
Diversey Corporation, The 101
Dow Chemical Company, The 18

Electric Storage Battery Company, The 27

Fabreeka Products Company, Inc. 24
Fafnir Bearing Company, The 28
Formica 32
Franklin Railway Supply Company 87

General Electric Company 20, 21, 35
General Railway Signal Co. .....Back Cover
General Steel Castings 23
Get Together Department 102
Gold Car Heating & Light Co. 103
Goodall Fabrics, Inc. 12
Gunite Concrete & Construction Co. 103

Haskelite Manufacturing Corporation 34
Heywood-Wakefield 37
Hooper & Sons Co., Wm. E. 6
Hooven, Owens, Rentschler Co. 85
Hunt Company, Robert W. 102
Hunt-Spiller Mfg. Corp. 93
Hyman-Michaels Company 103

International Correspondence Schools 102
Iron & Steel Products, Inc. 102

Johns-Manville 14

Karen Co., The 102

Lenkurt Electric Co. 101
Lima-Hamilton Corporation 85
Lima Locomotive Division, Lima Shovel & Crane Division 85
Lovell-Dressel Co. Inc. 16
Luminator Inc. 36

McConway & Torley Corporation 26

National Pneumatic Company 13
New York, New Haven and Hartford R.R. 7
Niles Tool Works Co. 85

Ohio Locomotive Crane Co., The 102
Okonite Company, The 44

Pantosote Company, The 17
Parr Paint & Color Company, The 100
Pullman Standard Car Mfg. Co. 8, 9
Purdy Company, The 103

Railway Educational Bureau, The 102
Ryerson & Son, Inc., Joseph T. 104

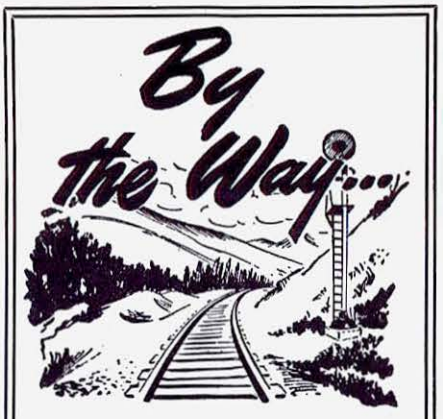
Safety Car Heating and Lighting Co. 25
Scullin Steel Co. 30
Simmons-Boardman Pub. Corp. ...97, 100, 103
Standard of California 39
Standard Oil Company of Texas 39
Standard Steel Works Division, Baldwin Locomotive Works 10
Symington-Gould Corporation, The ..... Inside Back Cover

Tuco Products, Inc. 100

Union Pacific Railroad 38
United States Envelope Company 29
Union Switch & Signal Co. 42, 94, 95

Van der Horst Corp. of America 22

Wallack Bros. 102
Westinghouse Air Brake Co. 40
Wine Railway Appliance Co., The ..Front Cover



Among the 2,000,000 or more visitors expected at the Railroad Fair in Chicago this summer will be thousands of railway officers from all over the country.

For these men *Railway Age* will provide in its July 24 issue, the Railroad Fair Number, a guide book and handy reference on all Fair activities.

—And for thousands more, unable to attend, this issue will paint a vivid picture of the Fair and highlight its significance as a milestone in railway progress.

A complete schedule of events will be included. An entire article will be devoted to the gigantic pageant dramatizing transportation progress from the Indian canoes of 1673 to the modern streamliners of today. In addition, the modern passenger trains which will succeed one another in the constantly-changing track exhibit will be listed, and the special exhibits of individual railroads will be featured. Such joint and individual exhibits as the railway supply industry decides to include will also be extensively described and illustrated.

As background for this momentous railroad show the editorial staff of *Railway Age* will review the steady advance of the science of railroading, especially as marked by the advance in the physical tools of doing business—in which, of course, manufacturers have played a major role.

That's why the Railroad Fair Number offers manufacturers such an exceptional opportunity—first to support the railways in this greatest of all railway shows and then to tie in with the whole panorama of railway progress, focusing attention on individual product exhibits which will not be otherwise identified.

STEEL *in stock at* **RYERSON**

• Ryerson has the steel you need ready for immediate shipment. Twelve convenient Ryerson plants stock more than ten thousand kinds, shapes and sizes of steel and allied products. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City, Pittsburgh, Los Angeles.

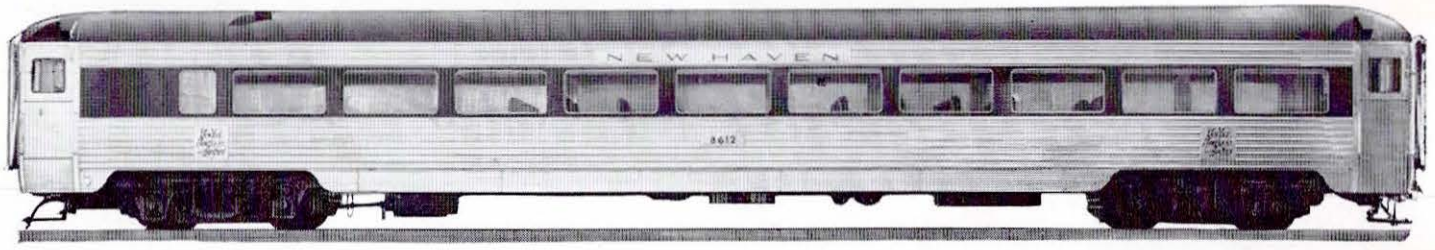
Principal Products Include:

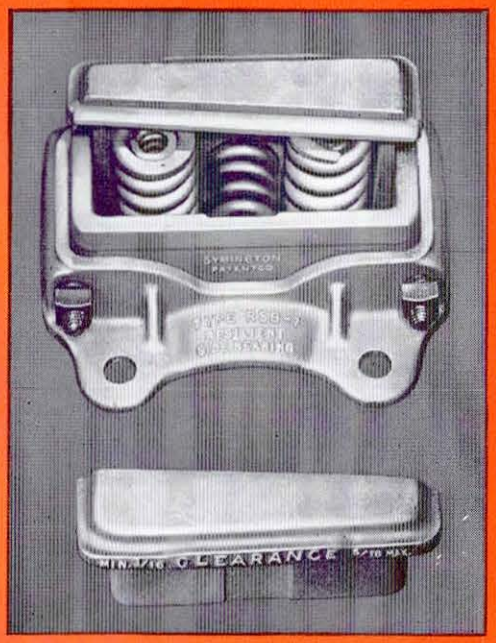
Structurals	Alloys	Mechanical Tubing	Reinforcing
Plates	Cold Finished Steel	Boiler Tubes	Nails, Rivets, etc.
Sheets	Tool-Steel	Welding Rod	Machinery
Strip	Stainless	Babbitt, Solder	Tools

Symington*

RESILIENT SIDE BEARINGS

FOR BETTER RIDING PASSENGER CARS





CASE HISTORY NEW HAVEN RAILROAD

October, 1939—New Haven Railroad installed 5 car sets of Symington Resilient Side Bearings on Grill Cars.

March, 1946—180 car sets applied to their DeLuxe Passenger Coaches.

May, 1947—27 additional car sets purchased for Sleeping Cars.

REASONS:

1. Symington Resilient Side Bearings progressively slow up and stop car body roll before it can develop excessive side bearing pressure.
2. Reduce truck shimmying or nosing.
3. Eliminate side bearing shocks.
4. Contribute to long life of equipment.
5. Add greatly to passenger comfort.

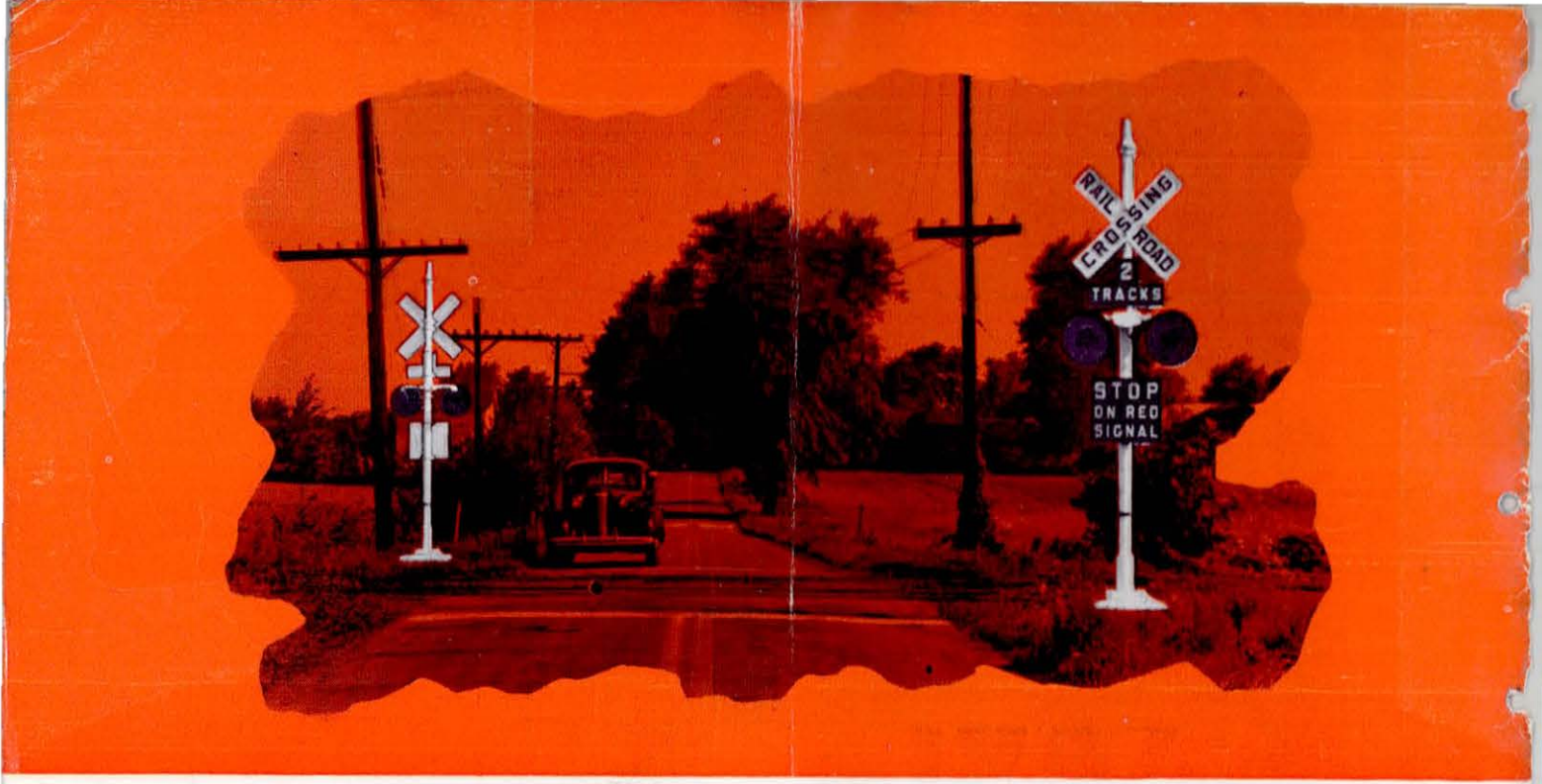
DETAILS AVAILABLE IN BULLETIN NO. S-415

* REG. U. S. PAT. OFF.

THE SYMINGTON-GOULD CORPORATION

Works: ROCHESTER & DEPEW, NEW YORK

New York • Chicago • St. Louis • Boston • San Francisco • *In Canada:* ADANAC SUPPLIES, LTD., Montreal, Que.



G·R·S HIGHWAY CROSSING SIGNALS

LOW FIRST COST - LOW INSTALLATION COST - LOW OPERATING COST - LOW MAINTENANCE COST

LOW FIRST COST

G-R-S- flashing-light signals are the most economical *effective* crossing protection you can buy. For the money it takes to protect *one* crossing by grade separation, you can protect *many* crossings with G-R-S signals —and get a greater reduction of your total potential crossing hazards.

LOW INSTALLATION COST

G-R-S flashing-light signals can be quickly and easily mounted on standard precast foundations. We can ship you the relay case factory wired. Simply install the case, connect the external leads to the binding posts within the case, and install the batteries.

LOW OPERATING COST

Fully automatic control circuits can eliminate the expense of crossing watchmen. Lamps and battery-charging equipment are economical in their energy requirements.

LOW MAINTENANCE COST

G-R-S flashing-light signals are built to give long service with little attention. About all the maintenance needed is cleaning the lamp units, changing out lamps, and inspecting the batteries.

For low cost, effective crossing protection, install G-R-S flashing-light signals. Write your nearest G-R-S district office for a copy of Bulletin 177.

GENERAL RAILWAY SIGNAL COMPANY

New York 17 Chicago 3 ROCHESTER 2, N.Y. St. Louis 1

A-2292